The Falkland Islands

Identification of Slender-billed Curlew

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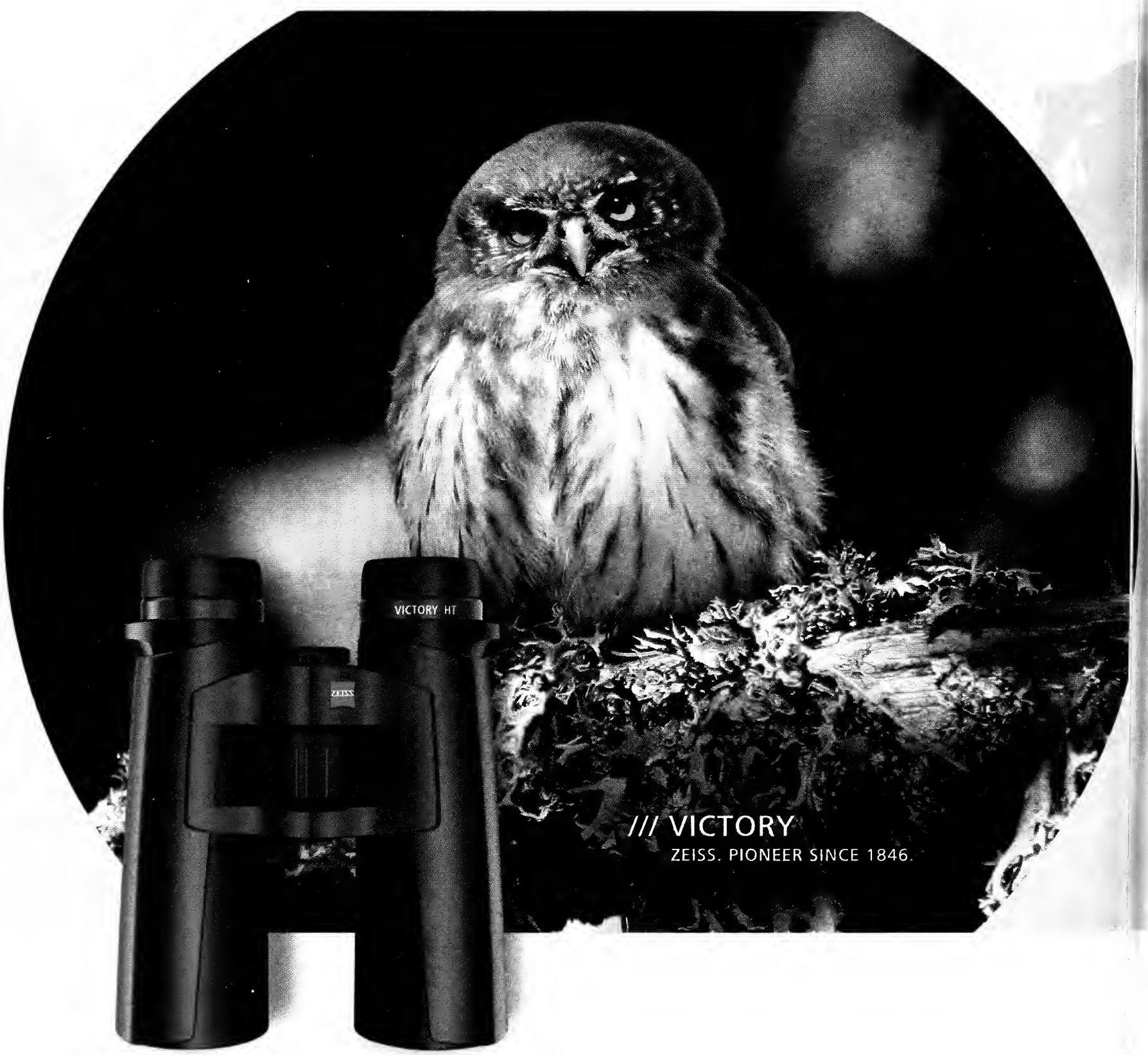

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British Birds

Volume 107 • Number 6 • June 2014

The 'Druridge Bay curlew', a small curlew seen in Northumberland in early May 1998, identified and subsequently accepted as a Slender-billed Curlew, has undoubtedly been THE headline rarity of recent decades. That holds true whether or not you saw the bird and whether or not you considered that the identification was correct. In January this year, the BOURC confirmed that, after review, the quality of the evidence, in the (just) pre-digital era of the late 90s, was simply not sufficient for the first and only record of this Critically Endangered species.

The joint BOURC/BBRC report on the review of the Druridge curlew will be published in next month's *BB*, but this issue contains a new identification paper on Slender-billed Curlew, one that has been many years in the making and which had an important bearing on the review of the DBC. I think many people, me included, believe that the Slender-billed Curlew is probably now extinct, so this might seem a lot of detail too late in the day. However, there are (at least) two key reasons for publishing this article. First, there is still a chance, admittedly a vanishingly small one, that the species still survives. It seems unlikely – but if one turns up, we need to be able to identify it. The second reason lies in helping to review the records since the last of the well-watched wintering birds in Morocco disappeared, in the mid 1990s. A new yardstick for that process, which may well be the documentation of an extinction, is long overdue, and we might learn more about the species' demise because of it.

I grew up associating the Falkland Islands with warships and the 1982 conflict. Sarah Crofts' contribution to our series on Important Bird Areas presents an entirely different and very welcome perspective on this UK Overseas Territory. The seabirds alone are reason enough to visit, but there is plenty more besides. The big challenge for the future is to minimise the impact of the prospective oil industry on the islands' wildlife. The UK Government must take a strong lead to ensure the future conservation of these islands, and the UKOTs in general (see pp. 308–309).

Roger Riddington

***British Birds* aims to:** ❖ provide an up-to-date magazine for everyone interested in the birds of the Western Palearctic; ❖ publish a range of material on behaviour, conservation, distribution, ecology, identification, movements, status and taxonomy as well as the latest ornithological news and book reviews; ❖ maintain its position as the journal of record; and ❖ interpret scientific research on birds in an easily accessible way.

A turning tide for seabirds in the UK Overseas Territories

Seabirds are among the most threatened group of marine animals: there are no fewer than 98 globally threatened seabird species on the IUCN Red List (Spatz *et al.* 2014). Fifteen globally threatened seabirds breed in the UK Overseas Territories (UKOTs), seven of which are endemic. These endemic species range from the gigantic Tristan Albatross *Diomedea dabbenena*, which breeds almost entirely on Gough Island, to the Bermuda Petrel *Pterodroma cahow*, which breeds only on a few tiny islands in Bermuda. And it is quite possible that there are more, undescribed or undiscovered species (Black *et al.* 2013; Ryan *et al.* 2014; Mark Bolton pers. comm.).

Millions of pairs of seabirds have already been lost across the UKOTs, and there have been species extinctions too (Hilton & Cuthbert 2010). A tide of invasive mammals swept across the islands as they were colonised by humans, leaving only a small proportion as predator-free refuges for breeding seabirds and other wildlife. Invasive species are now one of the main threats to breeding seabirds worldwide (Croxall *et al.* 2012; Spatz *et al.* 2014) and they affect some of the most important islands in the UKOTs, including the World Heritage Sites of Gough and Henderson.

Despite having been on some of these islands for hundreds of years, invasive mammals have an ongoing impact. For example, breeding Murphy's Petrels *P. ultima* on Henderson have a fledging success rate of below 10% as Pacific Rats *Rattus exulans* take most chicks within days of hatching, leading to ongoing population decline (Brooke *et al.* 2010). On Gough, introduced House Mice *Mus musculus* continue to consume albatross chicks alive, as well as taking the chicks of other burrowing petrels when available (Wanless *et al.* 2012). The Tristan Albatross will become extinct without conservation intervention (Wanless *et al.* 2009), and Gough may also lose its wealth of other breeding seabirds (Cuthbert *et al.* 2013).

But it seems the tide might finally be slowly turning against invasive species on islands. At the start of April 2014 came the news that the Australian Government's operation to remove rats, mice and rabbits from Macquarie Island was successful. Macquarie is a vast island of some 13,000 ha, and the operation took seven years and cost around AU$25m (approximately £14m). The benefits are already evident. Important plant species are showing a remarkable recovery, Blue Petrels *Halobaena caerulea* are breeding in a more widespread area, and Grey Petrels *Procellaria cinerea* have had their most successful breeding season since recording of their populations commenced in 2000 (www.greghunt.com.au).

On South Georgia, what is perhaps the world's most ambitious invasive mammal eradication programme is continuing, led by the South Georgia Heritage Trust. Two phases have already been completed to clear introduced rodents from huge areas of the island that are currently separated by glaciers. The acceleration of glacial retreat is reducing the time available for this operation: if it cannot be completed before rodent-free areas are joined with infested zones, it will be impossible to finish. The third and final phase is planned for 2015.

The Falkland Islands, showcased in this issue of *BB*, is one of the UKOTs where work to eradicate rodents from islands for the benefit of biodiversity is the most advanced. Local organisations and landowners have invested time and funds to clear islands of rats. The results have been positive as more than 20 islands have been cleared and remain rat-free. During the programme there have also been opportunities to learn more about rat behaviour (e.g. swimming distance) and ecological restoration (Sally Poncet pers. comm.).

There are substantial challenges ahead. In 2011, the RSPB attempted to eradicate Pacific Rats from Henderson Island. However, in April 2012 we received news of a rat sighting on the island, and rats were subsequently confirmed as having persisted on Henderson.

Together with other project managers, we are now reviewing the current best-practice guidance for tropical and subtropical rodent eradication projects, and we are continuing to investigate the potential for a second attempt on Henderson.

On Gough Island, we carried out a trial last year to determine whether it was possible to spread rodent bait on very steep, vegetated cliff areas, as this would be necessary in order to eradicate mice from the island. The results are promising, but any operation on such a remote site will be extremely complex and costly and will take several years to plan.

Dawson *et al.* (in press) recently prioritised all of the islands in the UKOTs for the eradication of invasive vertebrates. The analysis considered impacts on all terrestrial vertebrate species as well as seabirds. The top 25 islands include large uninhabited sites like Gough and Henderson, as well as smaller uninhabited sites. It is clear that the new challenges for island restoration in the UKOTs are the same as those worldwide: to clear larger, populated islands; to facilitate the recolonisation of seabirds and other threatened wildlife; and to maintain good biosecurity systems to prevent re-invasion and secure the conservation gains made in each new operation.

Resourcing this work is our biggest challenge. There is effectively no funding source available from which major eradication projects in the UKOTs can seek support. In practice, current policy and administrative obstacles prevent access to Lottery funds for projects in the Overseas Territories; European Commission LIFE+ funds, which fund so many effective projects across the EU, are not available to most of the UKOTs; and the UK Government's main scheme for funding environment projects in the OTs, Darwin Plus, is too limited to fund large-scale projects like those on Gough and Henderson. On Macquarie Island, the Australian Government funded the entire operation. In contrast, major eradication projects in the UKOTs require massive fundraising efforts by non-governmental organisations, vastly increasing the challenges and complexities of these projects. The UK Government has undoubtedly been broadly supportive of this work to date but, if we are really to turn the tide on invasive species and improve the fortunes of seabirds in the UKOTs, we must hope that, in this instance, our government follows Australia's lead.

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Clare Stringer

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News and comment

Compiled by Adrian Pitches

Opinions expressed in this feature are not necessarily those of *British Birds*

Chris comes home

Following TV presenter Chris Packham's heroics in Malta, where he made the annual massacre of spring migrants a very high-profile embarrassment for the Maltese Government (see www.chrispackham.co.uk for the video diaries of his ten-day stay), his namesake Chris the Common Cuckoo *Cuculus canorus* has also made a triumphant homecoming. And arguably Chris the Cuckoo has achieved even more than his fellow migrant from southern Europe.

It was in May 2011 that BTO researchers fitted the first satellite tag to a Cuckoo in an attempt to find answers to the dramatic decline of this iconic species in the UK. Little did they know that they would still be following this bird three years later! Named after Chris Packham, Chris the Cuckoo has now completed his sixth trans-Saharan journey to and from the Congo rainforest in central Africa, clocking up 47,000 km since he was first tagged in Breckland on the Norfolk/Suffolk border.

This spring he left Sierra Leone, just south of the Sahara, on 11th April and by the evening of 25th April he was back at the spot where he spent most of last summer and close to where the tag was originally fitted. Satellite tracking of his journeys has helped to identify the Po Valley in northern Italy as an important site for Cuckoos feeding up for the southward crossing of the desert. Chris has also helped the BTO to find out where British Cuckoos spend the winter and that they head back to the UK in the spring through West Africa.

The average lifespan of a Cuckoo is around four years – Chris is at least four years old, since he was an adult when he was tagged in 2011. It was originally thought that Chris's satellite tag would last for 2–3 years but both Chris and his tag have exceeded all expectations and both are still going! Phil Atkinson, lead scientist on the project, said: 'It's fantastic that Chris has given us so much information over the last three years. However, it isn't over yet. The technology used to track our Cuckoos is cutting edge, and whilst we think that Chris's tag might stop transmitting in the coming year, we really don't know as this is the first time these tags have been used and they might last longer than we currently think. I really hope that is the case and we get to follow this very special bird for a while longer yet.'

Meanwhile, hot on the heels of Chris, the *British Birds*-sponsored cuckoo BB has also returned safely to the UK. During the evening of 27th April, BB left the Cantabrian Mountains of northern Spain and when he next transmitted, on the evening of 29th April, he was in northwest France, 48 km southeast of St Malo and 648 km north of his last position in Spain. From the information received it appears that he took a direct flight across the Bay of Biscay. His next transmission, at 03.26 on 2nd May, showed that he didn't hang around in France, as he was back on the southern shore of Loch Katrine, Stirling, the site at which he was tagged on 17th May 2012. Since setting out from the Congo, three and a half months before, BB had covered 6,000 km. By the end of June the Cuckoos will be heading south again. You can follow all the BTO Cuckoos at www.bto.org/cuckoos

Swift supporters swoop on Cambridge

Bird lovers, experts and action groups from around the globe gathered in Cambridge in April to debate how to reverse the decline in swift populations. More than 150 people from 24 countries as far afield as the USA, Canada, Brazil, Uzbekistan and Azerbaijan met at the inaugural Cambridge International Swift Conference.

Cambridge and the surrounding area is a hotspot for Common Swift *Apus apus* conservation. For example, the RSPB is registering the locations of all known breeding Swifts to enable planning authorities to take on board some of the measures used to mitigate the impact of development on nest sites – see www.rspb.org.uk/helpswifts. Meanwhile, South Cambridgeshire District Council's highly successful project in Fulbourn played Swift calls to attract the birds to new nesting sites created after a major redevelopment and thereby helped to safeguard East Anglia's biggest colony.

The three-day conference also examined the tracking of Swifts to Africa, nestbox projects, Swifts in the arts, Swift welfare and rehabilitation, as well as papers on Neotropical, North American and other European species of swifts. Edward Mayer, director of Swift Conservation, said: 'We brought together swift experts and enthusiasts from across the world to make a great step forward for the conservation of these spectacular birds.'

Dick Newell of Action for Swifts said: 'There are some 25 million homes in the UK. That works out at one pair of Swifts for every 287 homes. Surely, with a combination of efforts by the house-building industry and individuals in their own homes we can do a lot better. Few things in summer are more enthralling than a vibrant colony of Swifts in your neighbourhood.'

(Contributed by Dick Newell)

Raymond King

126. Common Swift *Apus apus*, East Glamorgan, May 2012.

Rehabilitating seabirds really can work

The severe storms that lashed Spain, France and western parts of the UK during the past winter were bad news for seabirds, and the RSPB estimates that more than 30,000 auks perished in the violent weather. The long-term impact of this toughest of winters on UK auk colonies remains to be discovered, but we felt that this story, from Jean Bradford, of the South Devon Seabird Trust, was interesting. Jean reports that: 'Two of our Guillemots *Uria aalge* were caught up in this disaster, and whilst under normal circumstances I would not bring this to anyone's attention, I do feel that one of the recoveries in particular warrants a place in our rehabilitation case histories. This particular Guillemot was found at Jard-sur-Mer, France, on 8th February. It was freshly dead – reason: 'violent weather'. The duration of time between release and finding was 4,996 days.

'We had released this bird on 5th June 2000 after almost six months in care. It had been admitted to our centre on 30th December 1999 heavily contaminated with oil *and* injured, necessitating an operation on its wing. Its recorded weight at time of release was 715 g. It had been weighed on two previous occasions prior to release – on 6th March 2000 it weighed 700 g and on 2nd May 685 g.

'The point I should like to make is that some rehabilitators might consider that this bird had all the hallmarks of one that might not survive. However, not only did it survive heavy oiling, an operation, a longer-than-normal time in care and being only 715 g at time of release, it went on to have another (almost) 14 years of life.

'Incidentally, the other ringing recovery was for a Guillemot which we released on 9th March 1999; it was found almost 15 years (5,465 days) later at Getaria, Spain. It is recorded as 'freshly dead on shore due to the storms'. Its recorded weight at the time of release was 825 g. As far as our records are concerned, it did not have any notable problems other than being a victim of oil pollution. However, it too is testament to the fact that oiled auks *do* survive rehabilitation.'

Guillemot research axed by Natural Resources Wales

One other item of Guillemot news: the long-running study of the birds on Skomer, Pembrokeshire, by Prof. Tim Birkhead of Sheffield University and colleagues has had its £12,000 annual grant axed by the Welsh Government quango Natural Resources Wales. If you disagree with this decision, please sign the online petition asking for it to be reconsidered: www.ipetitions.com/petition/reinstate-funding-for-skomer-islands-guillemot

As the petitioners state: 'This is a hugely important study, and gives valuable insights into seabird life and what affects their populations. Not only is it a shame to end such a long-running (and therefore valuable) dataset, but the cut couldn't have come at a worse time, considering the huge impact the recent storms have had on seabird populations.'

Coast-to-coast wheelchair marathon to improve countryside access for the disabled

There's still time to catch up with RSPB staffer Roy Taylor on his epic coast-to-coast wheelchair marathon, which ends in East Yorkshire on 3rd June. Roy, the Peak District and Humber Reserves manager for the RSPB, was diagnosed with Motor Neurone Disease in September 2013. He takes up the story: 'MND is not a very nice illness. Although I can still "hobble" a few yards with the aid of a stick, all my "walking" is now done from a wheelchair. Like many other people, I love being outdoors and watching wildlife. It makes me feel alive.

'Yet despite purchasing the best four-wheel-drive wheelchair on the market, many paths suitable for disabled people like me are inaccessible due to stiles, kissing gates and other obstacles. It needn't be like this! While I can't change what happens in the wider countryside, working for the RSPB I can ensure that the 20 superb RSPB nature reserves in northern England are exemplars of accessibility for people with disabilities, mobility problems and for parents with prams!

'During this year, I will be auditing the accessibility of all those RSPB reserves and drawing up a prioritised list of actions for change – from installing wheelchair-friendly access points to better views from hides. All of the money raised by my "Wheelchair Challenge" will be spent directly on implementing the changes I identify.'

And it has been some challenge: 350 km (215 miles) along the Trans-Pennine Trail from Southport in Merseyside to Hornsea in East Yorkshire in just ten days. You may have joined Roy en route – or be walking/wheeling the final stretches along the Humber Estuary with him from 1st June – but whether you were there or not, please donate to Roy's online giving page: www.virginmoneygiving.com/roy215miles. Nearly £10,000 had been raised even before Roy set out on 24th May.

Robin Prytherch

Robin Prytherch is well known to readers of *BB* thanks to his long association with the journal, not least as one of the compilers of *News & comment* for a number of years and as a long-serving member of the Editorial Board. However, another significant milestone in his birding life was as one of the co-founders of the Bristol Ornithological Club in 1967, along with other eminent personalities such as Ken (K. E. L.) Simmons, Ken (K. D.) Smith and Bernard King, who became the Club's first Honorary Life Member.

Recently, a dinner was held to celebrate Robin's retirement from the Club committee after 47 years of stalwart effort into steering the Club towards what must now be one of the most active in Britain. It currently has around 600 members, runs a regular programme of events ranging from weekly Tuesday half-day walks to longer field trips, weekends away and at least one holiday a year, several of them overseas, not forgetting a series of monthly indoor meetings during the winter months. Robin himself leads quite a few of the field trips, including his now well-known New Year's Day visit to Slimbridge.

The emblem of the Club is the Pied-billed Grebe *Podilymbus podiceps*, itself significant in Robin's early birdwatching career. Together with H. A. Thornhill, he found the first for Britain at Blagdon Lake, on 22nd December 1963, although its identification was not confirmed until two weeks later (the full story is in the August 1965 issue of *BB – Brit. Birds* 58: 305–309). And it was Robin who also drew the Club's enduring emblem.

So we wish him a happy 'retirement', which we all know will be an active one from which we feel sure the Club will still benefit!

(Contributed by Wendy Dickson)

BB grant for Common Sandpiper study

A *BB* grant of £1,500 has been awarded to Brian Etheridge and Ron Summers to help fund their study of Common Sandpipers *Actitis hypoleucos* in northern Scotland. Common Sandpipers are Amber-listed in the UK because of declines on their breeding grounds. The causes are unknown but may relate to wintering conditions. In 2013, nine breeding adults were fitted with leg-mounted light-level geolocators in their study area at Tongue, Highland. Plans for 2014 are to retrap as many of those birds as possible, to recover the information, and to expand the study by tagging more birds. In doing so, Brian and Ron will discover more about the migration routes and wintering areas of British-breeding Common Sandpipers, the timing of movements and the location of any important stopover sites, currently all largely unknown. The breeding study will also provide information on nesting success, and adult survival.

Mainland China's first birdfair

As the British Birdwatching Fair prepares to celebrate its 25th anniversary in August, mainland China has staged its very first birdfair. The event at Fuzhou, in Fujian Province in southeast China, was attended by an amazing 20,000 people: roughly the same number that attends Birdfair at Rutland.

Fifteen years ago, birdwatching was regarded as an unusual minority hobby in mainland China. Today, there are about 40 birdwatching societies, with thousands of regular members, all over the country and numbers are growing rapidly. 'China has had an impressive growth in its economy over the last three decades and now we are witnessing an impressive growth in the conservation movement. Most of the birders are from the younger generations, who are eager to learn more about nature and conservation. This will surely be a great support to the conservation movement of this big country and make the slogan of "Beautiful China" come true,' said Simba Chan, BirdLife's Senior Conservation Officer for Asia.

The fair was held at the Fuzhou National Forest Park, a popular birding and hiking area and one of the sites where modern ornithology took root in China. A team from BirdLife, together with the RSPB, Audubon Society from the USA, Bird Studies Canada, the Wild Bird Society of Japan, the Hong Kong Bird Watching Society, Burung Indonesia and BirdLife Australia, took part in the historic event, with 19 birdwatching or wild bird societies from mainland China, five wild bird societies from Taiwan and several other government and civil environmental organisations based in China.

British Birds grant supports wildlife protection in South Caucasus

During the winter of 2013/14, Eurasian Black Vultures *Aegypius monachus* were recorded in Armenia's Caucasus Wildlife Refuge (CWR), which received a grant of £1,000 from *BB* in 2013. There were three sightings of Black Vultures in the CWR during the winter of 2013/14, including a group of ten recorded on 29th December.

Black Vultures have a declining global population, with an estimated total population of 7,200–10,000 pairs across Europe and Asia. Persecution and, increasingly, a lack of carrion explain the falling numbers. The latter is undoubtedly mainly due to the changes in agriculture and pastoralism in eastern Europe and central Asia, which have reduced the number of domestic livestock. There has also been a drop in the numbers of wild ungulates such as Bezoar Goat *Capra aegagrus*, and Roe Deer *Capreolus capreolus*. Uncontrolled hunting and poaching are serious issues throughout Armenia, where killing extremely rare species often bolsters the standing of hunters in the community.

The CWR is owned and managed by Armenian NGO the Foundation for the Preservation of Cultural and Wildlife Assets www.worldlandtrust.org/about/partners/fpwc. *BB* made the grant following an application from the World Land Trust, which has been supporting FPWC's efforts since 2010. *BB*'s grant supported FPWC rangers, who are employed from the local community to patrol the refuge to prevent illegal hunting and to deliver education campaigns to challenge the cultural acceptance of wildlife hunting.

Also during 2013, on three occasions between July and November, a camera trap recorded a large male Caucasian Leopard *Panthera pardus saxicolor* in the CWR. This was the first leopard to be photographed in Armenia since 2007 and you can watch the footage at: www.youtube.com/watch?v=DNIS3VKfVV4&list=UUSCf8q0H2I8xeUC21dlgpog

FPCW

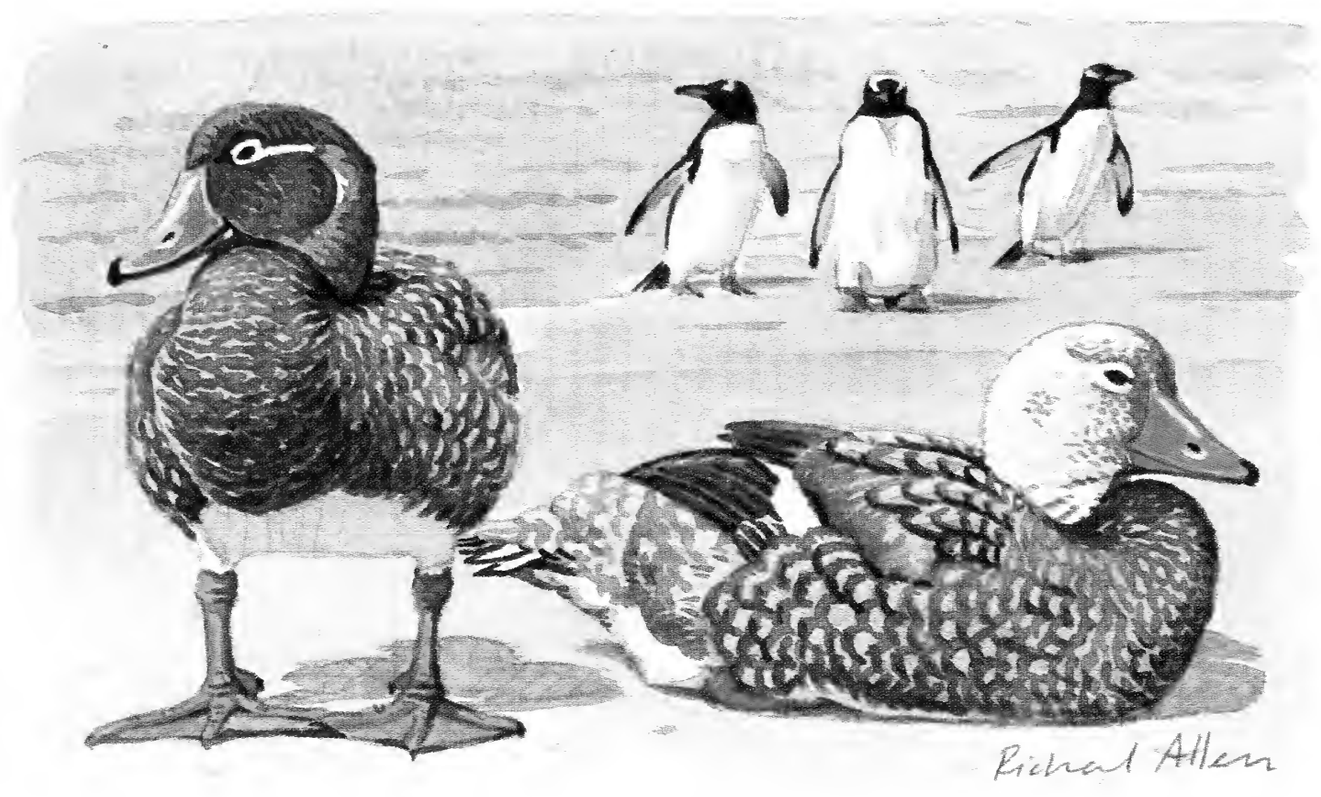
127. Eurasian Black Vultures *Aegypius monachus* recorded by camera trap in the Caucasus Wildlife Refuge in Armenia, winter 2013/14.

For extended versions of many of the stories featured here, and much more, visit our website www.britishbirds.co.uk

Important Bird Areas

The Falkland Islands

Sarah Crofts



Richard Allen

Falkland Steamer Ducks *Tachyeres brachypterus* and Gentoo Penguins *Pygoscelis papua*

Abstract The Falkland Islands are a UK Overseas Territory, some 12,700 km from the United Kingdom. The largest archipelago in the South Atlantic, with more than 700 islands, the Falklands contain 22 Important Bird Areas, reflecting mostly seabird congregations of global importance. The islands hold 61 breeding bird species and some 227 species have been recorded in total, including vagrants from South America, migratory wintering birds from the Arctic, and numerous non-breeding Antarctic and subantarctic seabirds, which are seasonal in the surrounding waters. Nine breeding species are of global conservation concern. The Falklands hold about 70% of the world population of Black-browed Albatrosses, of which nearly a quarter of a million pairs breed on just one island. There are five breeding species of penguin, including the largest population of Gentoo Penguins and the second-largest population of Southern Rockhopper Penguins in the world. There are two endemic species, Falkland Steamer Duck and Cobb's Wren, and the islands represent the global stronghold of the Ruddy-headed Goose and Striated Caracara. The introduction of seabird-protection measures in the islands' fishery has significantly improved the outlook for seabirds, but the relatively recent discovery of a viable oilfield heralds a new era for the Falklands, where environmental considerations – including risks to the huge seabird populations – will need to be carefully and responsibly managed.

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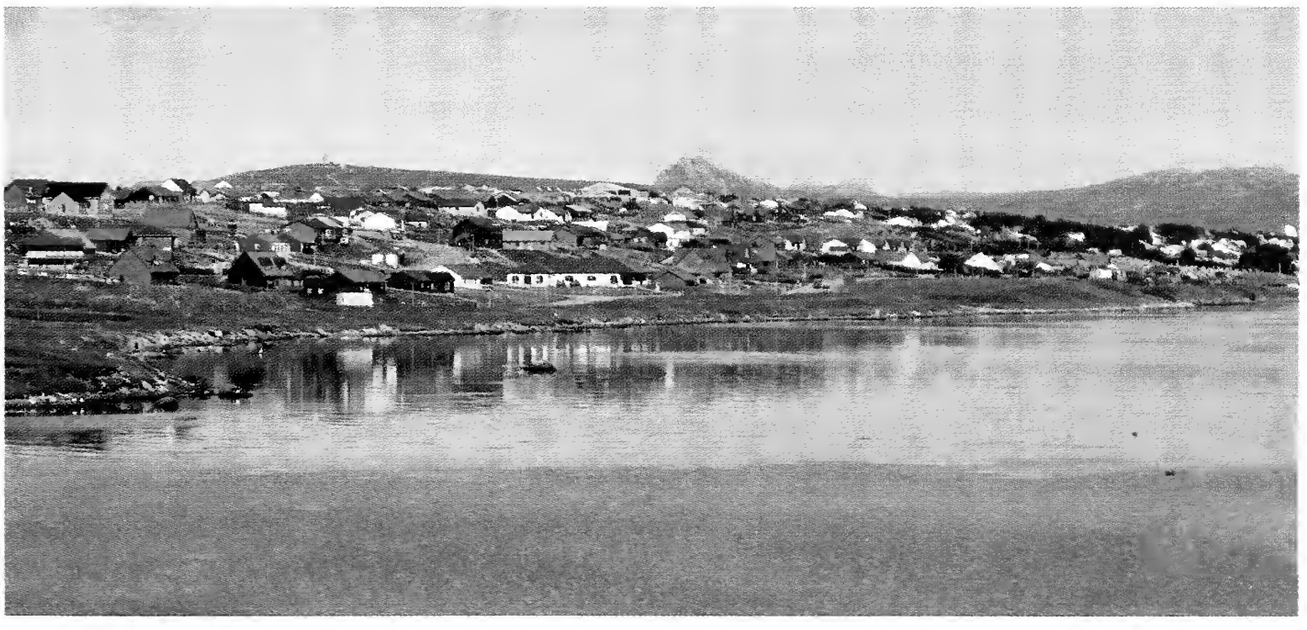
Introduction

The Falklands archipelago is a windswept group of islands in the South Atlantic. With a 500-year history from first discovery and a 250-year history of British occupation, the islands are steeped in a rich and controversial past of pioneers, privateers and plunderers. Situated to the east of Cape Horn, the islands quickly became an important refuge for shelter and repairs to storm-damaged ships, while a wealth of resources (including seabirds and their eggs) replenished stores during long sea voyages. Throughout this chequered history, the natural resources of the Falkland Islands have supported the islanders' lives and lifestyles. Nineteenth-century hunters exploited whales, seals and seabirds for their oil, fur and meat. The ungrazed pastures provided fodder for introduced livestock, which duly multiplied in their thousands. Since the 1950s, the seas around the Falklands have been important for fisheries and, in the last few decades, the wildlife has attracted a significant and increasing volume of wildlife tourism.

These past and present economic developments have made the Falklands dynamic and progressive, despite their small population and relative remoteness. The discovery of oil and its potential for further improving the lives of the islanders will have to be carefully balanced with the risks (to wildlife). If it proves to be economically viable and large-scale extraction goes ahead, the Falklands and UK Governments, the oil industry and the islanders will be sharing the responsibility for ensuring the protection and safety of the internationally important concentrations of seabirds and other wildlife.

The Falkland Islands comprise the largest archipelago in the South Atlantic and are located between latitudes 51°S and 53°S and longitudes 57°30'W and 61°30'W. They are approximately 550 km from the coast of continental South America to the west and 1,350 km from the subantarctic island of South Georgia to the southeast. The group comprises two main islands, East and West Falkland, and over 700 smaller islands, 510 of which are no more than 5 ha in size (Woods 2001). The total landmass covers an area of 12,173 km^2 (an area slightly smaller than Northern Ireland) and the distance between the furthest points east and west is 238 km.

The islands experience a temperate oceanic climate and all four seasons can seemingly occur within a single day. Rainfall is generally low, with a mean annual precipitation of 578 mm on East Falkland. Average wind speed is 15 knots (27.7 kph) and the average monthly maximum wind speed is 68 knots (126.4 kph). Despite the common misconception that winters are cold, the average number of days of lying snow is only 9.6, the average winter temperature is 5°C and the average summer temperature is 15°C (per UK Meteorological Office Mount Pleasant Complex for 1987–2012). Offshore sea surface temperatures are in the range 6–13°C with inshore temperatures 2–14°C.



Sarah Crofts

128. Stanley, capital of the Falkland Islands, looking west over Mt William and Tumbledown Mountain, is home to three-quarters of the Falkland residents; January 2005.

The marine productivity around the islands is heavily influenced by the region's oceanography. The dominant feature is the Falkland Current, a strong, cold current that branches off the Antarctic Circumpolar Current around the southern tip of South America, and travels north until it meets the warm Brazil Current. As a consequence, primary production is high; in fact, the values recorded around the Falklands are among the highest in the southwest Atlantic (Sanchez & Ciechomski 1995). High densities of euphausiid krill and hyperiid amphipods sustain important feeding and nursery grounds for many fish and squid species, which in turn support exceptionally high concentrations of seabirds and marine mammals. These include the largest breeding colony of Black-browed Albatrosses *Thalassarche melanophris* in the world: more than 200,000 pairs on the island of Steeple Jason.

The rugged landscape is composed of sedimentary rocks, which tend to be acidic. The oldest rock formations are the Proterozoic granites and gneisses found in the southwest corner. Repeated freeze-thaw cycles and icy winds during the last ice age produced dramatic and distinctive stone-run formations ('rivers' of stones flowing down valley slopes). Hilly rather than mountainous, the islands' highest elevations are Mt Usborne at 705 m in the Wickham Heights on East Falkland and Mt Adam at 700 m on West Falkland. Formed during wetter climes, the terrain is dominated by peat, and much of the lowland area consists of acidic grassland and heathland of low nutritional value.

Biogeographically, the islands are significant because of their position between Antarctica and South America. Low sea levels during the last ice age meant that the distance from the South American continent was much less than today, as little as 20–30 km and with an estimated minimum ocean depth of 10–30 m (Ponce *et al.* 2011; Austin *et al.* 2013). Connectivity may also have been enhanced by now-submerged islands and frozen seas. As a consequence, the biota shows overwhelming affinities to Patagonia and particularly Tierra del Fuego (McDowall 2005). It is possible that more species were present than today, perhaps with other land mammals in addition to the Warrah *Dusicyon australis*, a small fox that lived on East and West Falkland until hunted to extinction in 1876.

The majority of the 2,563 Falkland islanders (Falkland Islands Government Census, 2012) live in the capital, Stanley, on East Falkland. Around a quarter of the population live outside Stanley, which is referred to as 'camp' (derived from the South American gaucho word 'campos', meaning

Sarah Crofts

129. The interior of East Falkland is characterised by low-lying acid grasslands, dominated by stands of White Grass *Cortaderia pilosa*, which support species such as White-bridled Finches *Melanodera m. melanodera* and Rufous-chested Plover *Charadrius modestus*; January 2012.

Sarah Crofts

130. Black-browed Albatrosses *Thalassarche melanophris* follow a trawler in Falkland waters in the hope of an easy meal, January 2007. Residents of the Patagonian Shelf, these long-lived seabirds come ashore to breed at 12 sites across the Falklands.

countryside). The largest camp settlements are Goose Green (40 residents) and Port Howard and Fox Bay (each with 22 residents). Many islanders can trace their origins back 150 years or more to early British settlers.

The Falkland Islands Government is the largest employer, with agriculture, fisheries and tourism also significant. Prior to the 1980s the economy was reliant on wool exports, and there was a far greater population in rural areas, where large farms employed a high workforce. In the 1980s, land reform bills saw absentee landowner farms subdivided into smaller plots that were sold to local residents and, as wool prices fell, more people relocated to Stanley where jobs generated from the development of a newly licensed fishing industry provided plenty of opportunities.

The number of people involved in tourism in the Falklands is an indicator of the increasing importance of the industry to the islands. In the 1991 census only one person cited 'tour guide' as their primary occupation but the 2012 census indicated that at least 30 people were employed full time in tourism, while for those with supplementary jobs, tourism is by far the largest provider.

Breeding birds

Like many island ecosystems, the Falklands' avifauna evolved in the absence of mammalian predators (the one exception being the aforementioned Warrah). Species such as Striated Caracara *Phalcoboenus australis* and Blackish Cinclodes (or Tussacbird) *Cinclodes a. antarcticus* display a remarkable curiosity towards people. Unsurprisingly, human activities have affected the distribution and abundance of some species, although the only known local extinction of a breeding species was the Cinereous Harrier *Circus cinereus* in the mid-nineteenth century; its loss coincided with the growth of cattle and sheep farming (Woods 1975) and the species now occurs only infrequently as a visitor. A total of 21 resident landbirds, 18 waterbirds and 22 breeding seabirds (including five penguins and one albatross) breed in the Falklands. There are a further 18 annual non-breeding migrants and at least 148 occasional visitors recorded to 2009 (Woods *et al.* 2009).

The avifauna was eloquently described by early seafarers, while more recent work has added population estimates and ecological data (Bennett 1926; Cawkell & Hamilton

Table 1. Falkland Islands Important Bird Areas with qualifying categories. Modified from Falklands Conservation (2006) to incorporate subsequent updates from the IUCN.

IBA code	Site name	No. species	A1	A2	A4i	A4ii	A4iii
FK001	Beauchêne Island	10	7	4	0	3	√
FK002	Beaver Island Group	3	2	1	0	1	0
FK003	Bird Island	7	5	3	0	2	√
FK004	Bleaker Island Group	8	3	4	1	0	0
FK005	Elephant Cays Group	3	2	1	0	1	0
FK006	Hummock Island Group	4	3	2	1	0	0
FK007	Jason Islands Group	12	7	6	0	5	√
FK008	Keppel Island	7	4	3	0	0	0
FK009	Kidney Island Group	7	5	3	0	1	√
FK010	Lively Island Group	7	3	5	0	0	0
FK011	New Island Group	13	7	6	1	3	√
FK012	Passage Islands Group	6	4	4	0	0	0
FK013	Pebble Island Group	11	7	6	0	0	√
FK014	Saunders Island	7	4	3	2	2	√
FK015	Sea Lion Islands Group	10	6	6	0	1	0
FK016	Speedwell Island Group	11	5	6	1	2	√
FK017	West Point Island Group	10	6	6	0	1	√
FK018	Bull Point, East Falkland	5	2	3	0	1	0
FK019	Hope Harbour, West Falkland	7	4	3	0	1	0
FK020	Seal Bay, East Falkland	7	4	3	0	0	√
FK021	Volunteer Point, East Falkland	5	2	3	0	0	0
FK022	Bertha's Beach, East Falkland	6	2	3	1	0	√

Table 2. Global IBA criteria. Summarised from www.birdlife.org/datazone/info/ibacritglob

A1. Globally threatened species	Criterion: The site is known or thought regularly to hold significant numbers of a globally threatened species, or other species of global conservation concern. The site qualifies if it is known, estimated or thought to hold a population of a species categorised by the IUCN Red List as Critically Endangered, Endangered or Vulnerable.
A2. Restricted-range species	Criterion: The site is known or thought to hold a significant component of a group of species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA). This category is for species of Endemic Bird Areas (EBAs). EBAs are defined as places where two or more species of restricted range, i.e. with world distributions of less than 50,000 km^2, occur together.
A4. Congregations	Criteria: A site may qualify on any one or more of the four criteria listed below: i). Site known or thought to hold, on a regular basis, >1% of a biogeographic population of a congregatory waterbird species. ii). Site known or thought to hold, on a regular basis, >1% of the global population of a congregatory seabird or terrestrial species. iii). Site known or thought to hold, on a regular basis, >20,000 waterbirds or >10,000 pairs of seabirds of one or more species. iv). Site known or thought to exceed thresholds set for migratory species at bottleneck sites.

1961; Woods 1975, 1988; Croxall *et al.* 1984). The culmination of ten years of land-based surveys was the *Atlas of Breeding Birds* (Woods & Woods 1997), while another atlas was produced from at-sea observations of seabird distribution in Falklands waters (White *et al.* 2002). The evaluation of these data culminated in the designation of 22 Important Bird Areas in the Falkland Islands (Falklands Conservation 2006; see tables 1 & 2).

Endemics

There are two endemic birds. The Cobb's Wren *Troglodytes cobbi*, with an estimated breeding population of 6,000 pairs, is restricted to approximately 102 offshore islands that are free from mammalian predators (Poncet 2011). The optimal habitat for the species is boulder beaches fringed with Tussac Grass *Poa flabellata* – the denser the Tussac, the denser the territories – and the wrens feed mainly on marine invertebrates along the shoreline. Efforts to eradicate rats are ongoing, to restore island ecosystems generally but also to improve the outlook of Cobb's Wren and other native fauna. To date, the eradication of Brown Rats *Rattus norvegicus* on some 50 small islands (<320 ha in size) has been attempted (through a combination of bait stations and hand-broadcasting of poison) by the organisations Beaver Island LandCare and Falklands Conservation.

The Falkland Steamer Duck *Tachyeres brachypterus*, known locally as the Logger Duck, is large (males can weigh up to 4 kg) and flightless. Its population is estimated at up to 16,000 pairs and is thought to be stable (Woods & Woods 1997). The birds propel themselves through the water with both wings and feet in a cloud of spray. When folded, the wings are shorter than the body and males possess spurs, which are used in territorial disputes and capable of causing serious injury and death among the combatants. Immature birds gather in groups of sometimes more than 300, particularly in large sheltered bays, where they feed on marine molluscs and crustaceans.

The diverging avifauna of the Falklands

There are nine passerine species in the Falklands; all are southern South American in origin and in some cases they have been isolated long enough to be classed as distinct races or species. DNA evidence suggests that

Sarah Crofts

131. Striated Caracara *Phalcoboenus australis*, South Jason Island, December 2013. The Falklands are the stronghold of the world's most southerly raptor, which typically breeds on uninhabited, offshore Tussac islands, where nesting seabirds form an important part of the species' summer diet.

Aniket Sardana

132. Gentoo Penguins *Pygoscelis papua*, Carcass Island, December 2011. The Falkland Islands hold the largest breeding population in the world, with 130,000 pairs in the 2010 census. They are resident year-round and widely distributed, nesting in colonies on coastal greens, where the pairs raise two chicks each year.

Micky Reeves

133. Long-tailed Meadowlark *Sturnella loyca falklandica*, Stanley, January 2013. This endemic Falklands race is a handsome and conspicuous resident, found in settlements as well as being widespread on coastal heathland. The flamboyant red breast sported by the male birds has led to the local name of 'Robin'.

Cobb's Wren is the oldest of the Falkland passerines, diverging from the continental House Wren *T. aedon* during the great Patagonian Glaciation of the Pleistocene (Campagna *et al.* 2012). Cobb's Wren is larger than its mainland counterpart, with vocal and ecological differences that presumably reflect its adaptation to the harsh environments of exposed Falkland shores (Kroodsma & Brewer 2005).

Other taxa in the islands considered to be distinct races of mainland species are: White-tufted Grebe *Rollandia r. rolland,* Common Diving-petrel *Pelecanoides urinatrix berard,* Black-crowned Night Heron *Nycticorax nycticorax falklandicus,* Upland Goose *Chloephaga picta leucoptera,* Kelp Goose *Chloephaga hybrida malvinarum,* Short-eared Owl *Asio flammeus sanfordi,* Blackish Cinclodes, Dark-faced Ground Tyrant *Muscisaxicola m. maclovianus,* Sedge Wren (Grass Wren) *Cistothorus platensis falklandicus,* Austral Thrush (Falkland Thrush) *Turdus f. falcklandii,* Correndera Pipit (Falkland Pipit) *Anthus correndera grayi,* Long-tailed Meadowlark *Sturnella loyca falklandica* and White-bridled Finch *Melanodera m. melanodera* (Woods *et al.* 2009).

Further genetic research may lead to other Falkland populations being considered separate forms from their mainland South American counterparts. For example, the Black-browed Albatrosses of the islands have been shown to be genetically distinct from the populations in South America (Alderman *et al.* 2005).

Species of global conservation concern

The Falklands hold nine breeding species of global conservation concern included on the IUCN Red List, all of which occur in the 22 Important Bird Areas (table 3). A further 14 globally threatened seabirds are non-breeding transients through Falklands waters and are not considered further here.

Vulnerable species

Four species are currently classified as Vulnerable: Southern Rockhopper *Eudyptes c. chrysocome* and Macaroni Penguins *E. chrysolophus,* White-chinned Petrel *Procellaria aequinoctialis* and Cobb's Wren. The White-chinned Petrel population in the Falklands is small (50–100 pairs) and is restricted to a few sites. Macaroni Penguins occur at the most northerly point of the species' breeding range, with fewer than 150 pairs scattered within the Southern Rockhopper Penguin colonies across the islands (and hybrids between the two can occur; White & Clausen 2002).

The Falklands hold approximately 36% of the global population of the nominate race of Southern Rockhopper Penguins, which breed only in the South Atlantic. Monitoring in the region suggests that populations are stable or increasing, and this is certainly true of the Falklands, which have seen a 51% increase between 2005 and 2010 (Baylis *et al.* 2013). Nonetheless, the current population is thought to be less than 20% of the 1930s' estimate of 1.5 million breeding pairs (Pütz *et al.* 1998), while five-yearly censuses carried out by Falklands Conservation since 1995 reveal that the largest decline (90,000 pairs) was between 2000 and 2005. This has been attributed to decreased food availability over successive years, combined with a toxic algal bloom event in 2001/02 (Huin 2007). Scientists from the New Island Conservation Trust recorded high juvenile and adult survival between 2006 and 2010 (Dehnhard *et al.* 2013), which reflects more favourable conditions in the last five years. There are few significant terrestrial threats and population levels reflect the state of the marine environment.

Near Threatened species

The Black-browed Albatross (of which about 70% of the world population breeds in the Falklands) was, until recently, classified as the islands' only Endangered bird species. As a result of its increasing world population, owing to favourable feeding conditions and efforts over the last decade to reduce accidental mortality due to fishing practices, a recent evaluation by BirdLife International resulted in the species being downgraded to Near Threatened (www.birdlife.org). The Falklands population of Black-browed Albatrosses is likely to be resident in Patagonian Shelf waters throughout the year, owing to the high productivity and predictable food supply. The birds are often scavengers and follow trawlers, where discards and offal provide an easy source of food. This 'junk' food is thought to provide

Table 3. Important breeding bird species and criteria applicable to Falkland Islands IBAs. The abbreviation 'ss' indicates that the IBA criteria are applied at subspecies population levels only, while 'ss?' indicates that the subspecies status is in doubt. If no recent census data are available, estimates are taken from Woods & Woods (1997).

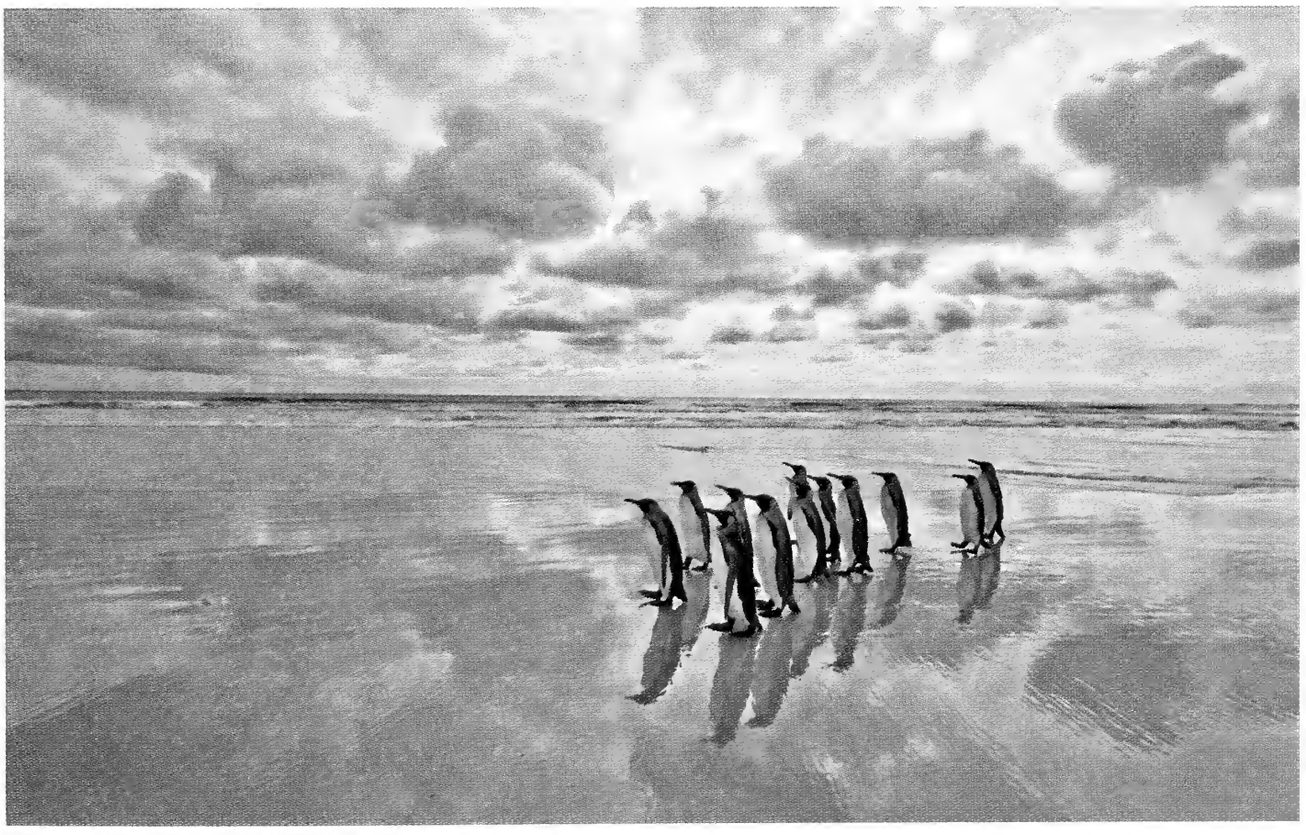
Species	IUCN status	IBA criteria	Estimated Falkland population (breeding pairs)	Most recent census
Falkland Steamer Duck *Tachyeres brachypterus*	LC	A2, A4i	9,000–16,000	
Upland Goose *Chloephaga picta leucoptera*	LC	A2 ss, (A4i) ss	46,000–85,000	
Kelp Goose *Chloephaga hybrida malvinarum*	LC	A2 ss, (A4i) ss	10,000–18,000	
Ruddy-headed Goose *Chloephaga rubidiceps*	LC	A2, A4i	14,000–27,000	
Gentoo Penguin *Pygoscelis papua*	NT	A1, A4ii	130,000	Baylis *et al.* in press
Southern Rockhopper Penguin *Eudyptes c. chrysocome*	VU	A1, A4ii	320,000	Baylis *et al.* 2013
Macaroni Penguin *Eudyptes chrysolophus*	VU	A1	<150	Huin 2007
Magellanic Penguin *Spheniscus magellanicus*	NT	A1, A4ii	100,000?	
Black-browed Albatross *Thalassarche melanophris*	NT	A1, A4ii, A4iii	500,000	www.birdlife.org
Southern Giant-petrel *Macronectes giganteus*	LC	A4ii	20,000	Reid & Huin 2008
Slender-billed Prion *Pachyptila belcheri*	LC	A4ii, A4iii	2,000,000 New Island	Catry *et al.* 2003
Fairy Prion *Pachyptila turtur*	LC	A4iii	>10,000	
White-chinned Petrel *Procellaria aequinoctialis*	VU	A1	55–100	Reid *et al.* 2007
Sooty Shearwater *Puffinus griseus*	NT	A4iii	>10,000	
White-tufted Grebe *Rollandia r. rolland*	LC	A2 ss	Unknown	
Black-crowned Night Heron *Nycticorax nycticorax falklandicus*	LC	A2 ss	2,000–3,500	
Rock Shag *Phalacrocorax magellanicus*	LC	A4ii	32,000–59,000	
Imperial Shag *Leucocarbo atriceps albiventer*	LC	A4ii	45,000–84,000	
Two-banded Plover *Charadrius falklandicus*	LC	A2 ss?	7,000–13,000	
South American Snipe *Gallinago paraguaiae magellanica*	LC	A2 ss?	5,000–9,000	
Dolphin Gull *Leucophaeus scoresbii*	LC	A2, A4ii	3,000–6,000	
Short-eared Owl *Asio flammeus sanfordi*	LC	A2 ss	100–200	
Striated Caracara *Phalcoboenus australis*	NT	A1, A2, A4ii	600–700	2012/13
Blackish Cinclodes *Cinclodes a. antarcticus*	LC	A2 ss	15,000–28,000	
Dark-faced Ground Tyrant *Muscisaxicola m. maclovianus*	LC	A2 ss	4,000–8,000	
Correndera Pipit (Falkland Pipit) *Anthus correndera grayi*	LC	A2 ss	8,000–15,000	
Sedge Wren (Grass Wren) *Cistothorus platensis falklandicus*	LC	A2 ss	1,300–2,300	
Cobb's Wren *Troglodytes cobbi*	VU	A1, A2	6,000	Poncet 2011
Austral Thrush (Falkland Thrush) *Turdus f. falcklandii*	LC	A2 ss	4,000–8,000	
Long-tailed Meadowlark *Sturnella loyca falklandica*	LC	A2 ss	6,000–10,000	
White-bridled Finch *Melanodera m. melanodera*	LC	A2 ss	7,000–14,000	

only a small proportion of their overall diet, and recent tracking studies show that the broad-scale distribution of the albatrosses at sea does not necessarily match the distribution of fishing vessels (Granadeiro *et al.* 2011; Catry *et al.* 2013). However, Black-browed Albatross is still the most common bycatch species in fisheries in Falkland waters and the neighbouring seas. Recent bycatch figures for the Falkland trawl fishery show that a minimum of 1,421 and 621 seabirds (predominantly Black-browed Albatrosses) were killed in 2010/11 and 2011/12 respectively (Parker 2012).

Four other breeding species are classified as Near Threatened: Gentoo Penguin *Pygoscelis papua*, Magellanic Penguin *Spheniscus magellanicus,* Striated Caracara and Sooty Shearwater *Puffinus griseus.*

Gentoo Penguins remain in close proximity to the coast throughout the winter. The population fluctuates significantly from year to year and the fact that the species is able to breed from three years of age, and to raise two chicks a year, facilitates a quick recovery after declines, which may offer some resistance to future environmental fluctuations and climate changes (Pistorius *et al.* 2010). The species is susceptible to sporadic outbreaks of avian pox on the Falklands, which are seemingly triggered through periods of starvation, often in near-fledged chicks. Such events tend to be related to discrete oceanographic anomalies that affect prey availability.

The Falklands archipelago is the stronghold of the Striated Caracara, the world's southernmost raptor. Referred to as 'Johnny Rooks' – their noisy, harsh cries resemble the calls of Rooks *Corvus frugilegus* – they show little fear of humans. In 1833, Darwin described them as 'exceedingly common'; by 1859, sheep farming was developing and by 1868 all land on East and West Falkland had been leased for farming (see Strange 1996). On account of damage caused to sheep and lambs, a bounty was placed on the Striated Caracara until into the 1920s, and the species subsequently became restricted to offshore islands and areas away from human habitation, where the favoured habitat is coastline fringed with Tussac (Meiburg 2006). The Johnny Rook has developed an affinity for seabird and seal diets and, having good night vision, the species can hunt nocturnal storm-petrels and prions (Catry *et al.* 2008). The



Aniket Sardana

134. King Penguins *Aptenodytes patagonicus*, Volunteer Point, December 2011. The largest of the Falkland penguins is at the northernmost point of its range, and the numbers in the Falklands represent only a fraction of the world population. The largest site, Volunteer Point, supports 1,500 breeding pairs, which in turn attract over 5,000 visitors each year.

greatest numbers of breeding pairs now coincide with the large seabird colonies on the Jason Islands, New Island, Beauchêne Island and Bird Island (on New Island there are an estimated 15.5 Striated Caracaras per km²; Catry *et al.* 2008), and the islands' total of around 600–700 breeding pairs is almost entirely covered within the Island group IBAs.

In winter, Striated Caracaras revert to a more terrestrial and opportunistic diet. Recent studies show that some birds move to islands where human activity and farming offer a more reliable food source, although the birds are still perceived as a threat to sheep farming in some quarters (Rexer-Huber & Bildstein 2013). Breeding on offshore islands has afforded them some protection, but relatively little is known about the population dynamics or whether the population is capable of increasing. Falklands Conservation (through a Defra-funded Darwin Initiative project) has ringed over 700 adults and juveniles on four islands to discover more about movements and other population parameters.

The Southern Giant-petrel *Macronectes giganteus* was downgraded from Near Threatened to Least Concern in 2009 based on population censuses; the census in 2004/05 revealed an increase in the Falklands population to 20,000 pairs or 40% of the known global population at the time (Reid & Huin 2008).

Range-restricted species

The Falkland Islands form part of the Southern Patagonia Endemic Bird Area (Stattersfield *et al.* 1998), which also includes parts of Chile and Argentina. Of the ten restricted-range species (i.e. with breeding distributions of <50,000 km²) that define this EBA, six occur in the Falklands: Falkland Steamer Duck, Ruddy-headed Goose *Chloephaga rubidiceps*, Dolphin Gull *Leucophaeus scoresbii*, Striated Caracara, Blackish Cinclodes and White-bridled Finch.

The Ruddy-headed Goose population on the continent, mainly in Tierra del Fuego, has undergone dramatic declines owing to habitat loss, hunting and the spread of predators such as foxes, so that the Falklands are now the species' global stronghold (with some 14,000–27,000 pairs; Woods 1988). Dolphin Gulls are widespread although not common, with perhaps several thousand pairs breeding in the Falklands. They often

Sarah Crofts

135. A mixed colony of Black-browed Albatrosses *Thalassarche melanophris* and Southern Rockhopper Penguins *Eudyptes c. chrysocome*, Beauchêne Island, October 2010. This impressive IBA is the most southerly island in the Falklands' archipelago, holds the second-largest colony of Black-browed Albatrosses in the world and is one of only a few islands in the Falklands completely free from any introduced species.

The importance of the Falkland Islands Important Birds Areas. BOX 1

- 22 Important Bird Areas have been identified in the Falklands, representing 6.3% of the total landmass of the islands.
- 17 of these consist of islands or island groups, encompassing some 186 islands and dependent islets in total.
- All IBAs have been designated under the A1 criterion (globally threatened bird species).
- 19 IBAs have been confirmed under the A2 criterion (restricted-range bird species – those with ranges smaller than 50,000 km^2) for the Southern Patagonia Endemic Bird Area (EBA 062), covering all six of the restricted-range species that occur in the Falklands.
- 17 IBAs have been designated under A4 criteria, with 11 sites meeting the A4iii criterion for globally important concentrations of more than 10,000 breeding pairs of seabirds, reflecting the importance of the islands for seabird colonies.

nest in colonies with South American Terns *Sterna hirundinacea* or other gull species, away from human activity and often on coastal spits or islands. Evidence suggests that the Falklands and the southern islands of Tierra del Fuego remained largely ice-free during glacial epochs, and probably acted as refugia for the Striated Caracara as well as for colonial seabirds and seals.

Congregations of seabirds

The Falklands' exceptional marine biodiversity includes internationally important seabird populations (Croxall *et al.* 1984). Some 60 seabird species inhabit Falklands waters, including 22 breeding species (table 4). Visitors include Cape Petrels *Daption capense* and Southern Fulmars *Fulmarus glacialoides*, which congregate during the winter, nine albatrosses and various Procellariidae, Hydrobatidae and Pelecanoididae species.

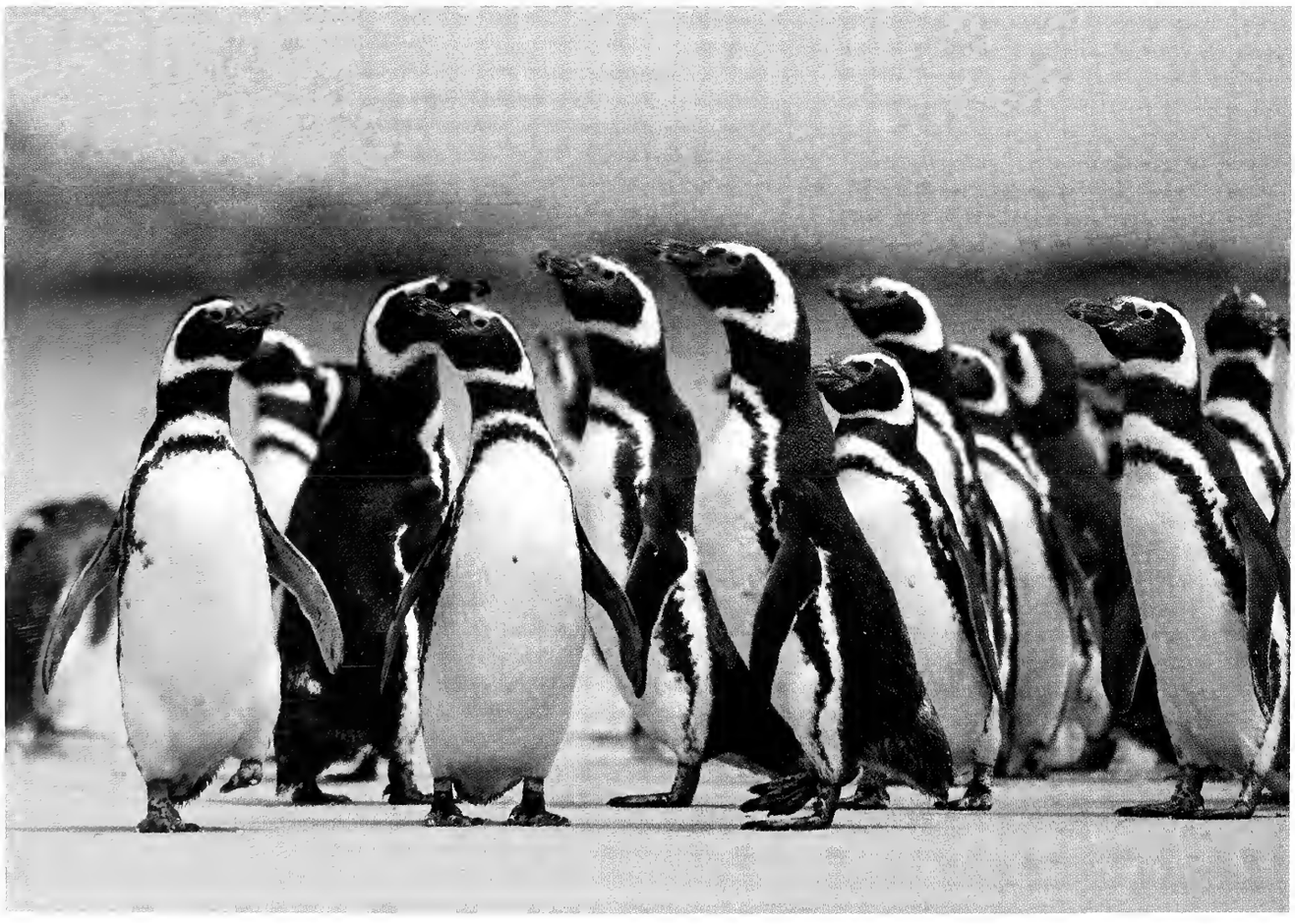
Of the 22 IBAs in the Falklands, the majority have been designated under the A4 criteria (important congregations of birds), with half the sites meeting the A4iii criteria for globally important concentrations of more than 10,000 breeding pairs of seabirds at one site (Falklands Conservation 2006; see table 2 for explanation of IBA qualifying criteria).

Small burrowing petrels and prions breed in vast numbers and are by far the most frequently encountered seabirds in Falklands waters: an estimated two million pairs of Slender-billed Prions *Pachyptila belcheri* have been estimated on New Island alone (Catry *et al.* 2003). Many offshore islands have not yet been surveyed completely and the total population and distribution of small burrowing seabirds such as Wilson's Storm-petrel *Oceanites oceanicus*, Grey-backed Storm-petrel *Garrodia nereis* and Common Diving-petrel are not fully known.

The Falklands hold approximately 500,000 pairs of Black-browed Albatrosses (www.birdlife.org) and 320,000 pairs of Southern Rockhopper Penguins (Baylis *et al.* 2013) and they often breed together in mixed colonies; the largest, at Steeple Jason Island (a private nature reserve and IBA), is made up of 214,000 and 121,000 pairs respectively. Gentoo and Magellanic Penguins are present at 18 of the 22 IBAs. Gentoo Penguin colonies are widespread across the Falklands, ranging from several tens to several thousand pairs nesting on coastal greens. The total population estimate in 2010 was 130,000 pairs (Baylis *et al.* in press). Magellanic Penguins, known locally as Jackass Penguins because of their braying call, are the least-studied Falkland penguin. The population parameters of this burrow-nesting species are poorly known, mainly because its widespread distribution and the high cost of surveys have so far prevented a comprehensive monitoring effort. Sooty Shearwaters breed in discrete locations, the most accessible being Kidney Island (National Nature Reserve and IBA). Undoubtedly one of the top birding experiences in the Falklands is to take a boat trip from Stanley out to Kidney Island, where an estimated 10,000 pairs of Sooty Shearwaters breed and return en masse at dusk to their nests burrowed under the Tussac.

Sarah Crofts

136. Southern Rockhopper Penguins *Eudyptes c. chrysocome*, Port Stephens, West Falkland, January 2013. This, the smallest of the Falkland penguins, breeds at 36 sites within the islands, the largest concentration being on Steeple Jason Island, which holds 121,000 pairs.



Aniket Sardana

137. Magellanic Penguins *Spheniscus magellanicus*, Carcass Island, December 2011. Known as Jackass Penguins because of their loud, braying calls, these are widespread breeders in the Falklands, raising two chicks each year from burrows in soft, peaty ground. Pairs return to the same burrows after wintering at sea, as far north as southern Brazil.

Table 4. Seabirds recorded in Falklands waters. B = breeding species; V = visitor. IUCN status given in parentheses, modified from White *et al.* (2002).

Species	Status	Species	Status
King Penguin *Aptenodytes patagonicus* (LC)	B	Antarctic Prion *Pachyptila desolata* (LC)	V
Gentoo Penguin *Pygoscelis papua* (NT)	B	Slender-billed Prion *Pachyptila belcheri* (LC)	B
Adelie Penguin *Pygoscelis adeliae* (NT)	V	Fairy Prion *Pachyptila turtur* (LC)	B
Chinstrap Penguin *Pygoscelis antarcticus* (LC)	V	Kerguelen Petrel *Aphrodroma brevirostris* (LC)	V
Snares Penguin *Eudyptes robustus* (VU)	V	Atlantic Petrel *Pterodroma incerta* (EN)	V
Southern Rockhopper Penguin *Eudyptes c. chrysocome* (VU)	B	Soft-plumaged Petrel *Pterodroma mollis* (LC)	V
Northern Rockhopper Penguin *Eudyptes moseleyi* (EN)	V	Grey Petrel *Procellaria cinerea* (NT)	V
Royal Penguin *Eudyptes schlegeli* (VU)	V	White-chinned Petrel *Procellaria aequinoctialis* (VU)	B
Macaroni Penguin *Eudyptes chrysolophus* (VU)	B	Spectacled Petrel *Procellaria conspicillata* (VU)	V
Magellanic Penguin *Spheniscus magellanicus* (NT)	B	Cory's Shearwater *Calonectris diomedea* (LC)	V
Wandering Albatross *Diomedea exulans* (VU)	V	Sooty Shearwater *Puffinus griseus* (NT)	B
Southern Royal Albatross *Diomedea epomophora* (VU)	V	Great Shearwater *Puffinus gravis* (LC)	B
Northern Royal Albatross *Diomedea sanfordi* (EN)	V	Manx Shearwater *Puffinus puffinus* (LC)	V
Sooty Albatross *Phoebetria fusca* (EN)	V	Wilson's Storm-petrel *Oceanites oceanicus* (LC)	B
Light-mantled Albatross *Phoebetria palpebrata* (NT)	V	Grey-backed Storm-petrel *Garrodia nereis* (LC)	B
Black-browed Albatross *Thalassarche melanophris* (NT)	B	White-bellied Storm-petrel *Fregetta grallaria* (LC)	V
Shy Albatross *Thalassarche cauta* (NT)	V	Black-bellied Storm-petrel *Fregetta tropica* (LC)	V
Grey-headed Albatross *Thalassarche chrysostoma* (EN)	V	Magellanic Diving-petrel *Pelecanoides magellani* (LC)	V
Atlantic Yellow-nosed Albatross *Thalassarche chlororhynchos* (EN)	V	South Georgia Diving-petrel *Pelecanoides georgicus* (LC)	V
Buller's Albatross *Thalassarche bulleri* (NT)	V	Common Diving-petrel *Pelecanoides urinatrix* (LC)	B
Southern Giant-petrel *Macronectes giganteus* (LC)	B	Rock Shag *Phalacrocorax magellanicus* (LC)	B
Northern Giant-petrel *Macronectes halli* (LC)	V	Imperial Shag *Leucocarbo atriceps albiventer* (LC)	B
Southern Fulmar *Fulmarus glacialoides* (LC)	V	Brown-hooded Gull *Chroicocephalus maculipennis* (LC)	B
Antarctic Petrel *Thalassoica antarctica* (LC)	V	Dolphin Gull *Leucophaeus scoresbii* (LC)	B
Cape Petrel *Daption capense* (LC)	V	Kelp Gull *Larus dominicanus* (LC)	B
Blue Petrel *Halobaena caerulea* (LC)	V	South American Tern *Sterna hirundinacea* (LC)	B
Broad-billed Prion *Pachyptila vittata* (LC)	V	Arctic Tern *Sterna paradisaea* (LC)	V
		Antarctic Tern *Sterna vittata* (LC)	V
		Chilean Skua *Stercorarius chilensis* (LC)	V
		Brown Skua *Stercorarius a. antarcticus* (LC)	B

Other Falkland breeding birds

Landbirds

The interior of the Falklands is largely grass and heathland. On poorly drained soils, White Grass *Cortaderia pilosa* is dominant and the Rufous-chested Plover (or Dotterel) *Charadrius modestus* and Correndera Pipit can be found nesting. The large interiors, such as the Lafonia grasslands in the south of East Falkland or the mountain tops of West Falkland, are exposed and offer limited habitat for birds. The drier areas support dwarf-shrub heath, particularly the heather-like Diddle-Dee *Empetrum rubrum*, where Two-banded Plovers *C. falklandicus* and White-bridled Finches can be found. Rivers, ponds and valleys hold higher bird densities, with species such as the South American Snipe *Gallinago paraguaiae magellanica* and Long-tailed Meadowlark. Passerines are perhaps most abundant on the ungrazed offshore islands, especially those with no rodents, where there are good opportunities to find the well-camouflaged Sedge Wren and Correndera Pipit. Settlements, gardens and hedgerows attract the Austral Thrush, Black-chinned Siskin *Spinus barbata* and congregations of the introduced House Sparrow *Passer domesticus*.

Coastal birds

The Falkland coastline is heavily indented, with many sheltered coves and bays as well as stretches of exposed cliffs. Giant Kelp *Macrocystis pyrifera* forms coastal belts, which can extend a few hundred metres offshore and provide an important habitat for marine life. At low tide, rocky reefs with mussels (*Mytilus* and *Perumytilus*) and limpets (*Siphonaria* and *Nacella*) are revealed and such productive shorelines support high aggregations of gulls (Brown-hooded *Chroicocephalus maculipennis*, Kelp *Larus dominicanus* and Dolphin), Steamer Ducks, Crested Ducks *Lophonetta specularioides*, Black-crowned Night Herons and Rock Shags *Phalacrocorax magellanicus*. The Magellanic Oystercatcher *Haematopus leucopodus* is a common coastal resident whereas the Blackish Oystercatcher *H. ater* is restricted to rocky shores and is often overlooked.

Wildfowl

A total of 14 native swans, geese and ducks inhabit freshwater, marine and grassland habitats. The Black-necked Swan *Cygnus melancoryphus* is localised (fewer than 1,000 pairs) and found in areas with large freshwater ponds. The shy Coscoroba Swan *Coscoroba coscoroba* is reported in small numbers only and has been recorded breeding on very few occasions. The four geese in the Falklands belong to the South American sheldgeese. Upland Geese are by far the most numerous, with an estimated population of 45,000–85,000 pairs, and are found throughout coastal habitats (Woods & Woods 1997). Males are highly territorial and fighting occurs throughout the year with disputes becoming fiercer into the breeding season. The smaller Ruddy-headed Goose is much more localised; IBAs holding good-sized groups of this species include Volunteer Point, Keppel Island, Saunders Island and Bertha's Beach. Kelp Geese are widely distributed around the coast, the more productive shorelines supporting large numbers of breeding pairs. The all-white male is never far away from the well-hidden nest where the camouflaged brown and white female incubates. Pairs graze on green and red seaweeds above the low-water mark. Ashy-headed Geese *Chloephaga poliocephala* are seen occasionally; most are probably vagrants from South America and very occasionally pairs may breed.

Sarah Crofts

138. Male and female Falkland Steamer Ducks *Tachyeres brachypterus*, Bertha's Beach, March 2011. The males display bright orange bills and are fiercely territorial. Groups of non-breeding birds (up to 300) can gather in sheltered bays, where they feed on marine molluscs and crustaceans.

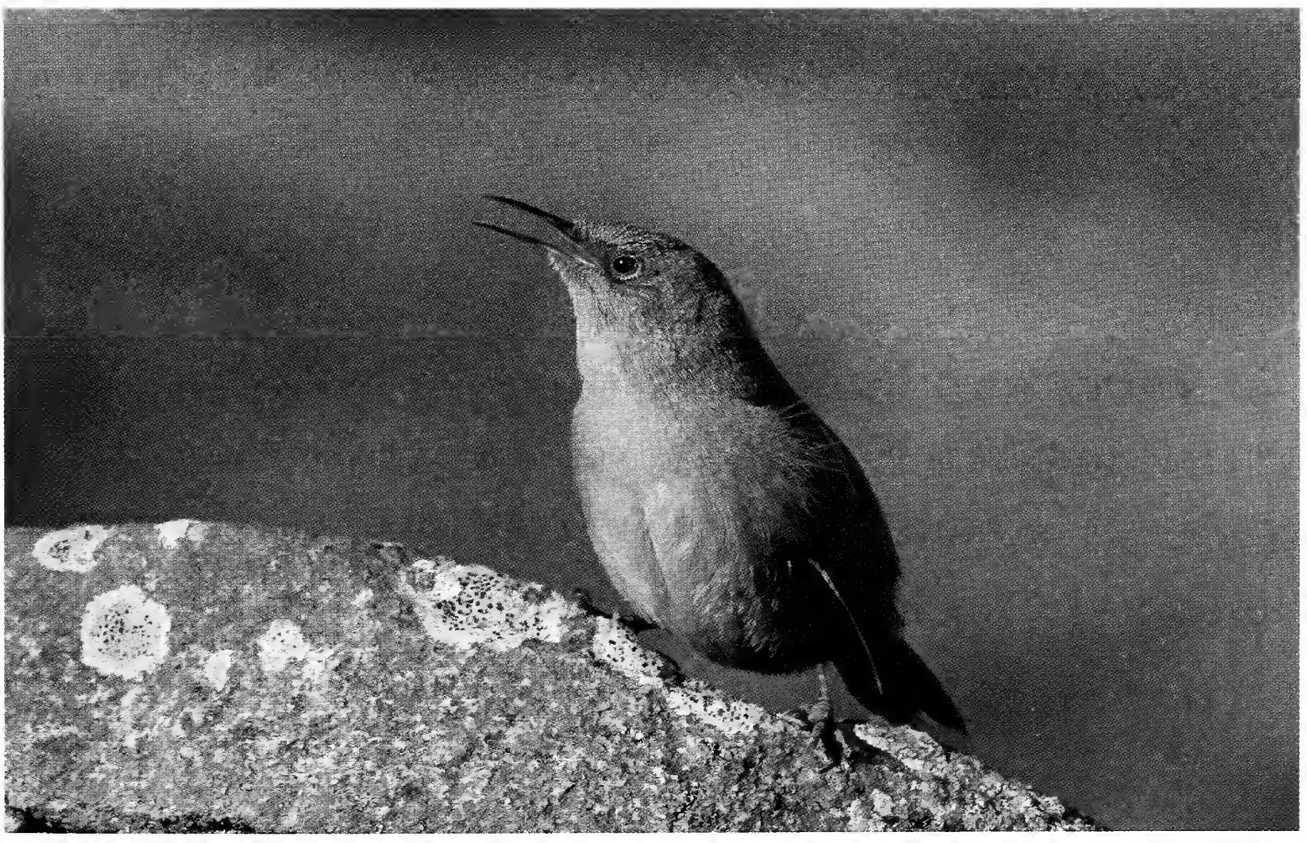
One of the best sites for wildfowl is Bertha's Beach IBA, a site designated under the Ramsar Convention, where Chiloe Wigeon *Anas sibilatrix*, Silver Teal *Anas versicolor fretensis*, Yellow-billed Teal *Anas flavirostris* and Yellow-billed Pintail *Anas georgica spinicauda* can be found, as well as large flocks of shorebirds.

Raptors

There are no native trees on the Falklands, but Gorse *Ulex europaeus* and various conifers (including Monterey Cypress *Cupressus macrocarpa*) planted for shelter have become nesting areas for the small but widespread population (<100 pairs) of Barn Owls *Tyto alba tuidara* and often the Southern Crested Caracara *Caracara plancus*. Short-eared Owls breed on offshore islands, often in association with small nocturnal burrowing seabirds (upon which they prey, in addition to songbirds, House Mice *Mus musculus* and insects), and are not common. Turkey Vultures *Cathartes aura jota* are resident, breeding away from humans on Tussac islands, but they often roost and scavenge around settlements, and are a common sight in Stanley. The population is thought to be around 4,000–6,000 individuals (Breen & Bildstein 2008); one of the most ecologically important scavengers, it was historically regarded as a pest by sheep farmers. Today culling is permitted under licence, although at current levels is unlikely to affect population size. The Red-backed Hawk *Geranoaetus polyosoma*, which occurs in several colour phases, is commonly seen scavenging at roadsides. It is widespread across the islands and its population is thought to be fewer than 1,000 pairs (Woods & Woods 1997), although it has probably benefited from increased feeding opportunities provided by introduced mammals such as hares *Lepus capensis*. Southern Crested Caracaras, common throughout southern South America, are thought to have arrived with the development of sheep farming; the population in the Falklands is probably fewer than 1,000 pairs. Similarly, Peregrine Falcons *Falco peregrinus cassini* are widespread but not common.

Migratory and vagrant avifauna

Non-breeding migrants from the Arctic, which spend the northern winter in South America and the Falklands, include large



Andrew Stanworth

139. Cobb's Wren *Troglodytes cobbi*, Carcass Island, August 2012. This Falklands endemic is restricted to approximately 102 offshore islands that are free from mammalian predators, where they feed on invertebrates along boulder beaches. Pairs hold territories and nests are made in nearby Tussac or crevices.

gatherings of White-rumped Sandpipers *Calidris fuscicollis*, with smaller numbers of Baird's Sandpipers *C. bairdii*, Sanderlings *C. alba*, and Hudsonian Godwits *Limosa haemastica*, all of which favour sandy beaches. The non-breeding or wintering Snowy Sheathbills *Chionis albus* join these shoreline assemblies. With a bobbing, pigeon-like movement, these terrestrial scavengers are often found patrolling for food scraps in seabird and seal colonies, along with resident gulls.

With the exception of seabirds, the majority of rare vagrants originate from South America. Some 150 species have been recorded, one of the most regular being the Cattle Egret *Bubulcus ibis* – numbers range from dozens to hundreds in a year. Chilean Swallow *Tachycineta leucopyga* and Barn Swallow *Hirundo rustica* are regular visitors in small numbers through the austral summer.

Since 2009, a Northern Rockhopper Penguin *Eudyptes moseleyi* has been returning each summer to a Southern Rockhopper colony. Northern Rockhoppers breed in the Tristan da Cunha group, some 4,000 km northeast of the Falklands.

Other important flora and fauna

To date, 178 vascular plants have been recorded as native, and one hybrid. Of these, 14 species are endemic to the Falklands and around 40 are listed as either globally or nationally threatened (Upson 2012). The majority of native species are also found in South America, particularly southern parts such as Tierra del Fuego, with a smaller group occurring in the subantarctic zone, including South Georgia.

The False-plantain *Nastanthus falklandicus* and Moore's Plantain *Plantago moorei* are two of the most range-restricted endemics, known only from the southwest corner of West Falkland, and both qualify for the IUCN category of Endangered. The Critically Endangered endemic *Nassauvia falklandica*, discovered only recently, is restricted to a few locations on hilltops in West Falkland (Upson *et al.* 2013). To date, 17 Important Plant Areas have been identified (Upson 2012). The programme, co-ordinated by Falklands Conservation and Plantlife, allows site protection for threatened plant populations through Falkland landowners.

Three species of pinnipeds are found in the Falklands. The Southern Sea Lion *Otaria flavescens* population was estimated at 7,000 individuals in 2003 (Thompson *et al.* 2005). This is a tiny fraction of the estimated 380,000 animals in the 1930s and, while hunting and exploitation of seals undoubtedly left their mark, other (unknown) factors probably con-

Micky Reeves

140. Magellanic Oystercatcher *Haematopus leucopodus*, Volunteer Point Beach, January 2012. A common coastal resident in areas with sandy beaches, whose noisy courtship posturing is illustrated here.

tributed to the observed decline. The South American Fur Seal *Arctocephalus australis* breeds at secluded locations away from human disturbance, with the majority of the population found on the IBAs of Bird Island, New Island and the Jason Islands. They are easily disturbed and, although the populations (>10,000) are thought to be recovering, increases are not remotely comparable with the Antarctic Fur Seal *Arctocephalus gazella* population explosion on South Georgia (see Aurioles & Trillmich 2008). In contrast, Southern Elephant Seals *Mirounga leonina* are more tolerant of humans.

A resident pod of Killer Whales *Orcinus orca* hunts seal pups in shallow pools along the tideline. Sightings of Orcas are not guaranteed, but early risers are often rewarded and Sea Lion Island is the best spot to see them during the early summer. More than 20 species of cetaceans have been recorded in Falkland waters (White *et al.* 2002), although most are transitory. Sei Whales *Balaenoptera borealis* are commonly sighted between February and April as they stop to feed on their migration northwards, and they have become a popular attraction for Stanley residents. Two resident inshore dolphin species are widespread: Peale's Dolphin *Lagenorhynchus australis* and Commerson's Dolphin *Cephalorhynchus commersonii.*

Threats and pressures

Historical legacy (1700–1900)

Historical exploitation of the islands resulted in chronic damage, which is still evident today. During this period, domestic goats *Capra hircus*, pigs *Sus scrofa* and cats *Felis catus* were introduced; subsequent populations became feral and had a major impact on the islands' avifauna. Brown and Black Rats *Rattus rattus* and House Mice arrived with the early seafarers. More than 400 islands, including the two main islands, are known to have suffered from introduced mammalian predators; 130 islands are rat-free and the remainder are unsurveyed (Poncet *et al.* 2011). Rodents are known to predate the eggs and young of ground- and burrow-nesting birds, while indirect consequences (such as competition for the same food resources) are likely (see St Clair *et al.* 2011). The species most vulnerable to predation are coastal birds such as the Blackish Cinclodes, Cobb's Wren and burrowing storm-petrels and prions.

By the middle of the nineteenth century most accessible land had been leased for farming, including many offshore islands, and to varying degrees that has had an impact on native habitats. Improved pasture grasses were often introduced and the grazing of livestock resulted in the loss of

Micky Reeves

141. Upland Geese *Chloephaga picta leucoptera*, Pebble Island, November 2012. This distinctive and common species is widespread across the islands. The (white) males engage in territorial combat displays and the family remains as a unit through their first year.

some sensitive plant species, such as Tussac Grass. The impact of fire, including that started by lightning strikes, led to areas of vegetation loss and soil degradation which, exacerbated by strong winds and a dry climate, has left some areas severely eroded. Despite these pressures, the Falklands today still hold 20% of the world's Tussac Grass.

Modern threats (1900–present)

Land use and alien flora

Today, most of the land is farmed through low-intensity grazing of livestock, mainly sheep. Grazing livestock create improved greens, which are favoured by Upland Geese. Today, geese are culled in far smaller numbers than in the past, and it has been shown that they do not consume enough grass to compete with livestock (Summers & McAdam 1993). Introduced plants such as Yorkshire-fog *Holcus lanatus* and Sheep's Sorrel *Rumex acetosella* are considered semi-naturalised and are widely distributed. At least 241 introduced vascular plant species have been recorded in the Falkland Islands to date (Upson 2012). Only a few remote offshore islands, including the Beauchêne Island IBA, are believed to be completely free of any invasive flora. There is localised control of detrimental invasive plants but a wider approach is required, especially where these are affecting designated IPAs and IBAs. The overall relationship between agriculture and avifauna is not well studied, and impacts are likely to be more pronounced with future climatic changes, especially in a drying-climate scenario.

Tourism and disturbance

Around 50,000 day tourists (arriving on cruise ships) visit the Falklands each year. Most tourist excursions to wildlife sites are brief and managed by local wardens, such as at the IBA Volunteer Point – the main site of breeding King Penguins *Aptenodytes patagonicus*. Independent tourist experiences are exceptional, and wildlife is viewed with little restriction and often in complete solitude. Visitors are asked to abide by the Falklands Countryside Code, which sets recommended distances for wildlife viewing. Many wildlife sites are protected by default, because they are either inaccessible islands or private land with no public access. It is important to note that most sites are privately owned.

Threats to seabirds

In a recent review, the Falklands were ranked 13th out of 239 priority countries/territories for seabirds according to the total numbers of species, IUCN threatened species status and number of endemics (Croxall *et al.* 2012). The main threats identified by that review were bycatch in fisheries and the impact of invasive species. The Falkland Islands was one of the first to adopt the Food and Agriculture Organisation Committee on Fisheries – National Plans of Action for Seabirds within its fisheries, with support from the RSPB.

The longline Patagonian Toothfish *Dissostichus eleginoides* fishery in the Falklands has had virtually zero seabird bycatch since mitigation measures were introduced. The fishery has recently been certified by the Marine Stewardship Council for environmentally responsible fishing. Conversely, in the demersal trawl fisheries, although bird-scaring lines and other mitigation measures have been compulsory since 2004, bycatch of seabirds is still unacceptably high. It is likely that the failure to detect cryptic mortality events is significant, and compounded by the fact that bird-scaring lines are a) not always deployed correctly and b) inefficient in rough seas. Seabirds are primarily attracted to fishing vessels by discards (offal and bycatch from the on-board processing factories), and are then susceptible to becoming entangled in the towing gear of the trawl nets. However, there is evidence that seabird bycatch is virtually zero during periods when there is no discarding. The next step for the Falklands trawl fishery is to investigate strategic discarding (e.g. retaining offal and discarding at night when fewer birds are around). Recent studies reveal that Falkland Black-browed Albatrosses have not become wholly reliant on fishery discards (Catry *et al.* 2013); this suggests that removing the opportunity for birds to feed on discards is feasible in the long term, although further research is needed.

Hydrocarbon development

The designated hydrocarbon exploration area

Sarah Crofts

142. Gypsy Cove, near Stanley, October 2008. The white-sand beaches and turquoise seas belie the frigid temperatures of the South Atlantic Ocean – the average inshore water temperatures are just 8°C. Yellow flowering Gorse *Ulex europaeus*, introduced by early settlers, provides nesting opportunities to landbirds.

Carissa Turner

143. Macaroni Penguins *Eudyptes chrysolophus*, Kidney Island, November 2008. Fewer than 150 pairs are scattered within Southern Rockhopper Penguin *E. c. chrysocome* colonies on the Falklands, which are at the north of the Macaroni's breeding range, and hybrids between the two species can occur.

Sarah Crofts

144. White-chinned Petrel *Procellaria aequinoctialis*, February 2007. Found in small numbers (50–100 pairs) and restricted to a few sites, where they nest in ground burrows, this is one of three Falkland species protected under the international Agreement on the Conservation of Albatrosses and Petrels.

of the Falklands covers over 400,000 km², some 50% larger than the UK sector of the North Sea. Drilling exploration in 2010 led to the Sea Lion Oil discovery, in an area which may hold some 350 million barrels of recoverable oil, and licensed companies are working towards a timescale that may see production start in around 2018. Offshore Environmental Impact Assessments (EIAs) are required by law and the process has highlighted some shortfalls in data for comprehensive risk assessments of the marine environment. The Hydrocarbons Environmental Forum, which brings together government, industry and environmental bodies, has been tasked to identify and commission research to fill the more important gaps.

Climate-related impacts

The impact of climate change on both terrestrial and marine ecosystems may increasingly affect the islands' avifauna, and this emphasises the value of long-term monitoring programmes. Impacts may range from an increase in adverse weather events on land to temperature changes at sea. For example, a severe storm in the summer of 2010 was responsible for a high breeding failure in Southern Rockhopper Penguins and Black-browed Albatrosses, the first such event recorded in the Falklands. Climate-related changes in the region's oceanography may affect prey availability, which is likely to have a major impact on seabirds. Climate data reveal that the Falklands are becoming drier, with more sunshine and less rainfall. How this will affect the islands' terrestrial biodiversity is not yet known.

Conservation measures

Land designated as National Nature Reserves (NNRs) or private reserves covers about 4% of the total landmass of the Falklands. In some instances, private ownership has provided the best protection for some species. The designation of IBAs, which amount to about 6% of the land area, emphasises the importance of these areas for seabirds, and for landbirds such as Striated Caracara and Cobb's Wren, which are restricted to rodent-free islands or areas where the human impact is low.

There are no requirements for NNRs or IBAs to be actively managed, and many of

those in the Falklands hold globally significant congregations of threatened seabirds, such as the IBA Steeple Jason Island and Beauchêne Island. The 22 designated IBAs cover 90% of the Southern Rockhopper Penguin and all of the Black-browed Albatross breeding sites, but only a handful of the 22 have management plans, and their adoption is reliant on agreement with landowners. The requirement for onshore EIAs to be carried out is currently under review by government, as is an island-wide strategy for protected areas.

No Marine Protected Areas (MPA) have been designated, although management zones to regulate commercial fisheries are in place. In accordance with global targets, a recent project funded by Darwin Plus (Defra) is being led by the South Atlantic Environmental Research Institute to explore the options of MPA designation. An approach that addresses long-range foraging of seabirds is required, as well as including coastal waters that may be vulnerable to future onshore coastal developments or new inshore marine activities.

In terms of international environmental agreements, the Falklands are party to the Ramsar Convention on Wetlands (with two sites, at Bertha's Beach and Sea Lion Island); the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); the Convention on Migratory Species (CMS, which includes all migrant seabird species susceptible to longline mortality in Falkland Islands waters); and, more recently, the Agreement on the Conservation of Albatrosses and Petrels (ACAP). The Falklands hold three ACAP species (Black-browed Albatross, White-chinned Petrel and Southern Giant-petrel), although other ACAP species regularly use the surrounding waters. National legislation includes the Conservation of Wildlife and Nature Ordinance 1999, which aims to safeguard the avifauna. All birds are protected under this, except for the Upland Goose and the feral domestic goose *Anser anser* (both can be taken at all times); and Crested Duck and Yellow-billed Teal (which cannot be taken between 1st July and 31st March). A National Biodiversity Strategy has been adopted by the Falklands Government to direct research and to leverage funding for priority species and habitats.

Conservation bodies

Falklands Conservation was set up in the late 1970s to protect and conserve the islands' wildlife. Its work ranges from research to conservation activities such as Tussac planting and invasive-species management. An important component is to engage with the local community, work with landowners and deliver educational material, as well as running a popular youth nature group. The organisation began monitoring seabirds in the 1980s and the annual Falkland Islands Seabird Monitoring Programme is now the largest island-wide monitoring scheme for birds. A Partner of BirdLife International, the organisation also has close ties with the RSPB.

Other local organisations include New Island Conservation Trust; Wildlife Conservation Society (which owns Steeple and Grand Jason Islands); and Beaver Island LandCare. The British Forces based on the islands run their own conservation group. More recently, the establishment of the South

Aniket Sardana

145. Short-eared Owl *Asio flammeus sanfordi*, Falklands, Sea Lion Island, January 2013.

Atlantic Environmental Research Institute aims to promote and facilitate research in the Falklands and other UK Overseas Territories (UKOTs), as well as providing a central repository of data for shared access.

The future

Invasive rodents are unlikely to be eradicated from the main islands in the near future. With large-scale eradications taking place on other UKOTs, for example South Georgia, lessons learnt from these will be invaluable to the future work on the larger Falklands offshore islands. The Falkland Islands needs to address and review its biosecurity measures, and also the risk of transporting avian disease, especially between the Falklands, Tierra del Fuego, South Georgia and Antarctica. For example, in contrast to South Georgia, there are currently no government regulations on cruise ship operators to ensure that passengers clean and disinfect footwear before entering the Falklands, although the more responsible companies and some landowners carry this out voluntarily.

Falkland Islanders themselves recognise the international importance of their wildlife. Fishing companies and scientists are continuing to work to improve the outlook for seabirds. Tourism has provided opportunities for many islanders, and the outstanding wildlife has helped to make the Falklands a top-ranked travel destination.

The environmental conditions for seabirds have been increasingly favourable for the last 5–6 years, with some tangible global implications such as the downgrading of the status of Black-browed Albatross from Endangered to Near Threatened. To continue to improve prospects, address data gaps and make precautionary decisions with hydrocarbon developments, the Falklands and UK Governments must ensure they provide the necessary extra resources to facilitate growth in the environmental sector in the immediate future, which promises to be a critical period for these islands.

Acknowledgments

The compilation of the data has been made possible by the vast amount of survey and census work completed in the Falklands by many dedicated individuals and organisations over the last decades, including the work undertaken to designate the 22 Falkland IBAs. I particularly wish to thank Sarah Brennan, David Doxford and James Fenton of Falklands Conservation, and Tony Marr for helping to improve earlier versions of this paper; Micky Reeves for supplying information on rare and vagrant birds; Robert Still for use of the IBA map; and Falklands Conservation for the IBA species criteria tables.

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Appendix 1

Visiting Falklands

How: There is one flight a week to Mount Pleasant Airport from Santiago, Chile. Alternatively, limited seats are available on the twice-weekly RAF flight that leaves Brize Norton, in Oxfordshire. For more information visit www.falklandislands.com

When: The best wildlife encounters are in summer (generally, October–November for mating/courtship; December–January for small chicks; February–March for large chicks). For a wildlife calendar see www.falklandsconservation.com

It is recommended that holiday itineraries are booked through local operators (www.falklandislandsholidays.com and www.falklandstravel.com), which include popular IBA destinations (Saunders Islands, Sea Lion Island, Carcass Island, Volunteer Point, Bleaker Island). Accommodation is limited at lodges and booking well in advance is recommended.

How to get involved

There are several recording programmes in which visitors can participate: report locations of banded Striated Caracaras, record the cetaceans you see when out and about or submit rare and vagrant bird sightings. Visit the Falklands Conservation offices in Stanley to find out how to contribute. Alternatively, you can leave records or reports on the organisation's Facebook page www.falklandsconservation.com

Local culture

- Falkland Toothfish is MSC certified and is often served in local restaurants.
- Upland Goose products such as pâté and eggs are popular cuisine (there are no restrictions on taking this species).
- Limited numbers of Gentoo Penguin eggs may be taken (under licence and by locals only) for personal consumption. (The four other penguin species are fully protected and eggs cannot be collected.)
- Few houses burn peat these days, but you may notice peat banks dug away from the time it supplied the many stoves. Traditionally, there is a peat-cutting public holiday in October.
- Recycling is limited: take used batteries home with you and bring reusable water bottles.
- Follow the Falkland Islands Countryside Code and be aware there is no right to roam on private land. You can find out more at the Falkland Islands Tourist Board www.falklandislands.com

How to contribute to conservation

Join Falklands Conservation as a member and receive regular newsletters and their biannual magazine or sponsor a King Penguin for a year. You can do this online at www.falklandsconservation.com or at the office in Stanley, which also has a small shop. The proceeds go to practical conservation work. You can also visit the Falklands Conservation stand at the British Birdwatching Fair at Rutland Water.

Further reading

Falklands Conservation: www.falklandsconservation.com
Falkland Islands Government website: www.falklands.gov.fk
New Island Conservation Trust: www.falklandswildlife.com
Falkland Islands Tourist Board: www.falklandislands.com

www.surfbirds.com/community-blogs/falklandbirder
www.falklandsconservation.com/our-library/wcm (Biannual Wildlife Conservation magazine back issues including lists of rare and vagrant bird sightings.)

A review of the identification criteria and variability of the Slender-billed Curlew

Andrea Corso, Justin Jansen and Szabolcs Kókay

Abstract This paper presents a complete review of all proposed identification characters for the Slender-billed Curlew *Numenius tenuirostris*. The review is based primarily on examination of museum specimens, but also on photographs of live birds. All characters were examined from scratch, so the analysis provides a revalidation of some criteria while challenging others. The most useful features for the identification of Slender-billed Curlew were found to be: the colour and pattern of the underside of the outer primaries; pattern and extent of the tibial feathering and length of exposed tibia; leg colour; pattern of the tail feathers; and shape of the dark flank markings. All other proposed features were found to overlap to some extent with some Eurasian Curlews *N. arquata*. Since the mid 1990s, when the species was seen on the last-known regular wintering grounds, in Morocco, curlews showing characters associated with Slender-billed Curlew have been reported from several countries, including England, Greece, Hungary, Italy and Spain. These reports have generated considerable and ongoing debate and this paper should provide a key baseline for any future reviews.

Introduction

Sightings of the Slender-billed Curlew *Numenius tenuirostris*, which migrated from its Siberian breeding grounds to wintering areas in the Mediterranean basin, have become increasingly infrequent since the 1970s (Gretton 1991, 1994; Gretton *et al.* 2002). Following the demise of the last-known wintering population, at Merja Zerga, Morocco, where the last reliable sighting occurred on 23rd February 1995 (van den Berg 1995; Anon. 1996), no known breeding, passage or wintering sites remain. The species is on the verge of extinction, if it still survives, and the number of individuals remaining must be tiny (Gretton *et al.* 2002; Chandler 2009; Delaney *et al.* 2009).

For a species that wintered in Europe, surprisingly little is known about its historical distribution, although it has occurred in many Western Palearctic countries (*BWP*; Gretton 1991; Gretton *et al.* 2002). It was described in 1817 by Vieillot, based on a specimen collected in Egypt prior to 1797, which is preserved in the Musée National d'Histoire Naturelle, Paris (accession number MNHN 13469). The only known former breeding site lies close to Tara, in the valley of the Irtysh River in western Siberia, where nesting pairs were observed between 1914 and 1924 (Ushakov 1909, 1912, 1916, 1925; Gretton 1991; Danilenko *et al.* 1996; Gretton *et al.* 2002). Just a single egg is known, collected on 2nd June 1909 by Ushakov (McGhie 2002).

In this paper we analyse and attempt to validate each character associated with the identification of Slender-billed Curlew. The work is based on personal studies over more than 20 years, particularly by AC. What has

emerged is that both Slender-billed Curlew and Eurasian Curlew *N. arquata* show greater plumage variation than is generally appreciated and, since the latter is the most likely pitfall, elimination of Eurasian (particularly the eastern race *N. a. orientalis*) is critical to the successful identification of Slender-billed.

Within the text, where a particular subspecies is referred to, the trinomial is used. Nominate Eurasian Curlew is referred to as *arquata*, the eastern *N. a. orientalis* as *orientalis*, central Asian *N. a. suschkini* as *suschkini*, nominate Whimbrel *N. phaeopus* as *phaeopus* and central Asian *N. p. alboaxillaris* as *alboaxillaris*. We have excluded discussion of *N. p. variegatus*, breeding in northeast Asia, since it has heavily barred underwings and restricted white on the back, mostly confined to the rump, while the race *N. p. rogachevae* (Tomkovich 2008) is also excluded since its taxonomic status remains unclear. The curlew species breeding in North America are excluded as they lack the white rump and lower back, show heavily barred underwings, and are thus quite different in appearance.

Methods

From the literature we distilled features that have been proposed for identifying Slender-billed Curlew. Three references in English are particularly comprehensive: van den Berg (1988), Gretton (1991) and Steele & Vangeluwe (2002). Gretton collated all the information known about Slender-billed Curlew, while van den Berg published notes on birds observed in Morocco in the winter of 1987/88. Steele & Vangeluwe discussed criteria leading to the acceptance of the sole British record, from Druridge Bay, Northumberland, in May 1998; a record that has subsequently been reassessed and found to be not proven (*Brit. Birds* in press). An extensive review of the identification criteria of Slender-billed Curlew and an appraisal of the variability of other curlews in Europe was published in Italian by AC (Corso 1995, 2000).

Understanding plumage and the extent of its variation lies at the heart of this review. Since field observations of Slender-billed Curlews are no longer possible, we have had to rely entirely on museum material, photographs and video footage to assess the purported characters. Specimens of Slender-billed Curlew from more than 60 collections were examined, mostly in Europe, but also in Asia and North America (see acknowledgments). Information was gathered mostly by direct personal visits but in a minority of cases via requests and online studies. Additional material was received from the international Slender-billed Curlew Working Group (SBCWG).

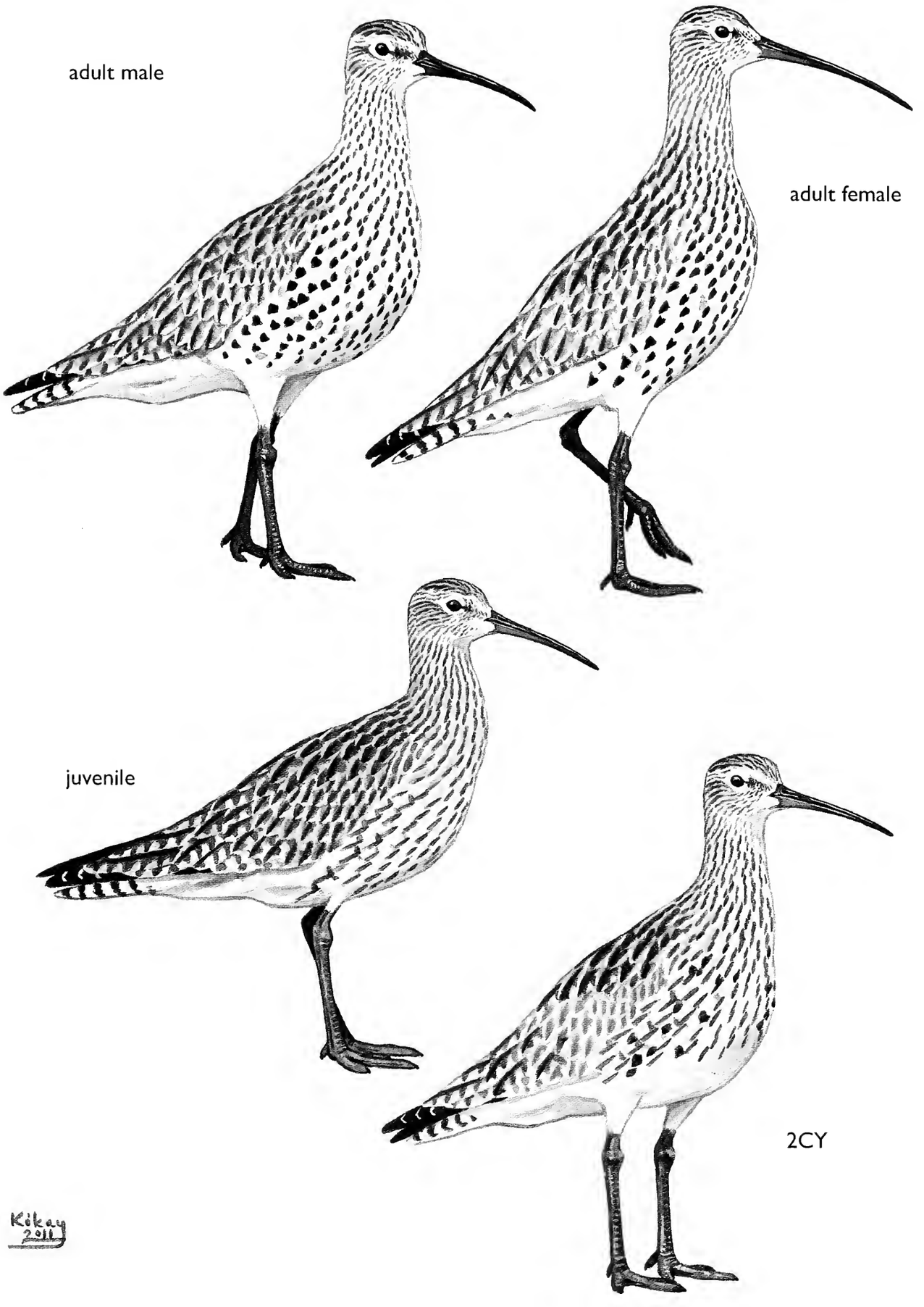
Photographs of live Slender-billed Curlews from France (Brosselin 1968; Duquet 2008), Morocco (van den Berg 1988) and Yemen (Porter 1984, 2004) were studied. In addition, a video of the Moroccan birds, filmed by Andy Butler in January 1994, proved to be highly informative. Images of controversial birds, of unproven or contested identity – including those in Serra *et al.* (1995), Corso (1996), Cleeves (2002), Oláh & Pigniczki (2009), *Dutch Birding* 17: 80 and 18: 140, *Birding World* 8: 90, and video by Yoshio Ebihara – were examined, but data from those birds are excluded from this study.

For other *Numenius* species, approximately 2,000 specimens were studied in museums throughout Europe, supported by observations of several thousand individuals in the field in Europe, North Africa, the Middle East and Asia.

The following terms have been used within the text to indicate how frequently characters are shown: 'commonly' (found in >100 birds seen/studied as skins); 'occasionally' or 'by some'/'sometimes' (found in 50–100 birds); 'rarely' or 'by few' (found in <50 birds seen/studied skins). If referring to peculiar features found only in a limited number of individuals, the exact number involved is quoted.

Moult, age and sex

Establishing the age of a suspected Slender-billed Curlew is an essential first step. Three age classes are recognised here: juvenile, adult and a transitional first-summer plumage, attained in the second calendar-year (2CY). Understanding the timing and extent of moult is key to establishing the age class. Of the Slender-billed Curlew specimens examined in this study, 14 were in juvenile plumage, 40 were 2CY birds in various stages of transitional plumage and 98 were adults (3CY or older). In addition, a further 20+ unsexed/unaged/undated specimens were examined. Among the sexed adults, about 70% were males.



Szabolcs Kókay

Fig. 1. Slender-billed Curlew. Top left, typical adult male; top right, adult female; bottom left, juvenile; bottom right 2CY. Adults show round spots on the underparts, particularly pronounced on the male. The head pattern (see text), dark legs and bill, long thigh feathering with only a short exposed tibia, long primary projection and wings projecting beyond the tail-tip are characteristic of Slender-billed Curlew. The juvenile shows streaked rather than spotted underparts, with indistinct, sparse barring on the flanks. In the 2CY, recently moulted fresh mantle feathers contrast with retained and abraded juvenile wing-coverts, with a mix of retained juvenile and fresh, adult-like spotted feathers on the underparts. Differences in tertial pattern are useful for ageing (see text).

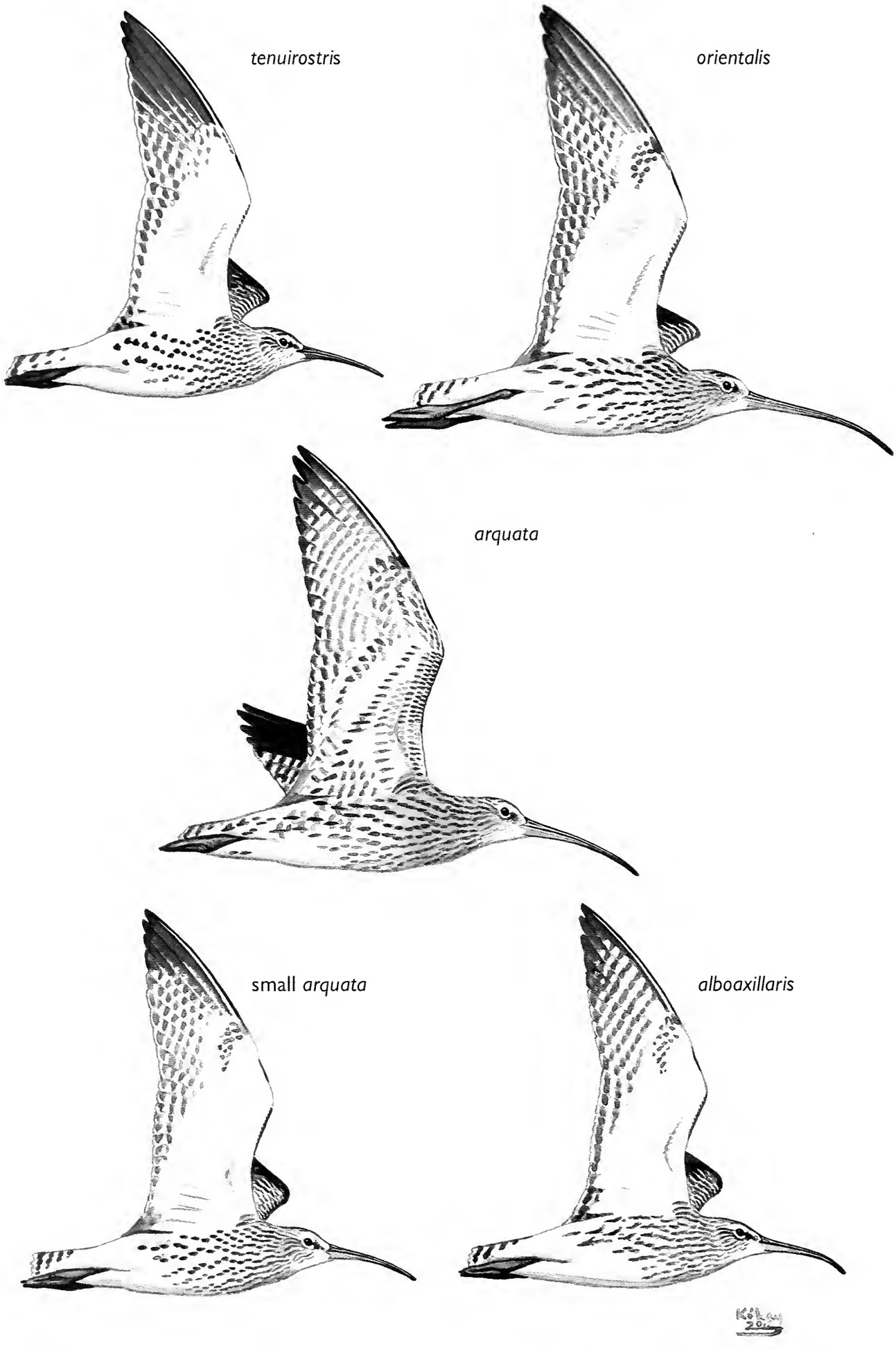


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Fig. 2. Western Palearctic curlews in flight showing differences in the pattern and coloration of the outer primaries (see text). Top left, Slender-billed Curlew, top right *orientalis* Eurasian Curlew; centre, *arquata* Eurasian; bottom left, small *arquata* Eurasian; bottom right, *alboaxillaris* Whimbrel. Note that the small *arquata* Eurasian Curlew (lower left) is based on birds observed in Sicily and elsewhere in Italy (see plates 180–181 & 185 and text).

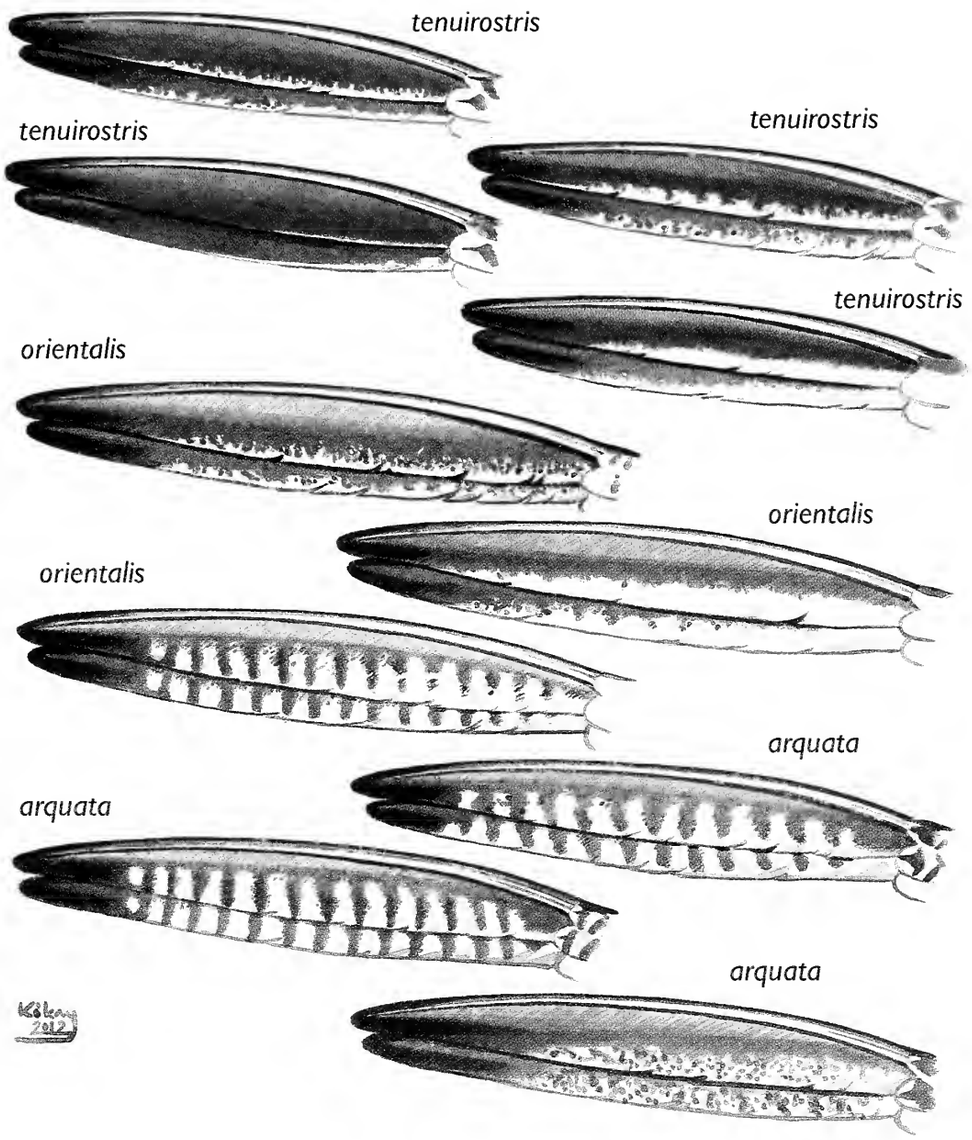

Fig. 3. Variation in the pattern to the underside of the outermost primaries (P10 and P9) in Western Palearctic curlews (based on actual specimens). Top four, variation in Slender-billed Curlew with typical male birds on the left, female/juvenile on the right. The three pairs at the bottom are based on birds from the breeding range of Eurasian Curlew *N. a. arquata*, the lowest pair resembling the pattern found in *N. a. orientalis*. The three feather pairs in the centre illustrate variability within *N. a. orientalis*. Note the similarity in the darkest outer primaries, which appear typical of Slender-billed, although that species lacks a contrastingly darker tip.

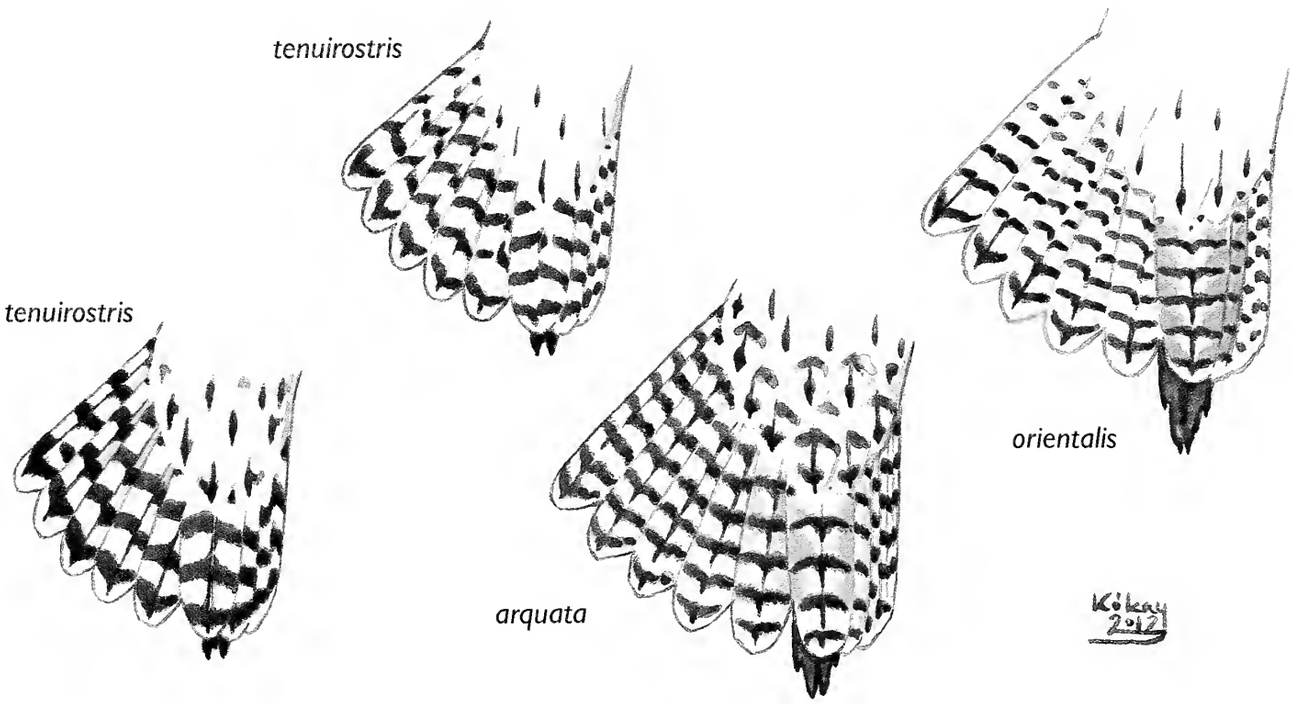

Fig. 4. Tail patterns of Western Palearctic curlews. The colour of the central rectrices, in fresh birds when the tail is not abraded or soiled, is a useful identification character. Note the patterning of the tail barring, both the shape and width being variable in Slender-billed Curlew, as well as among Eurasian Curlew taxa. Note also the variation in the uppertail-covert pattern.

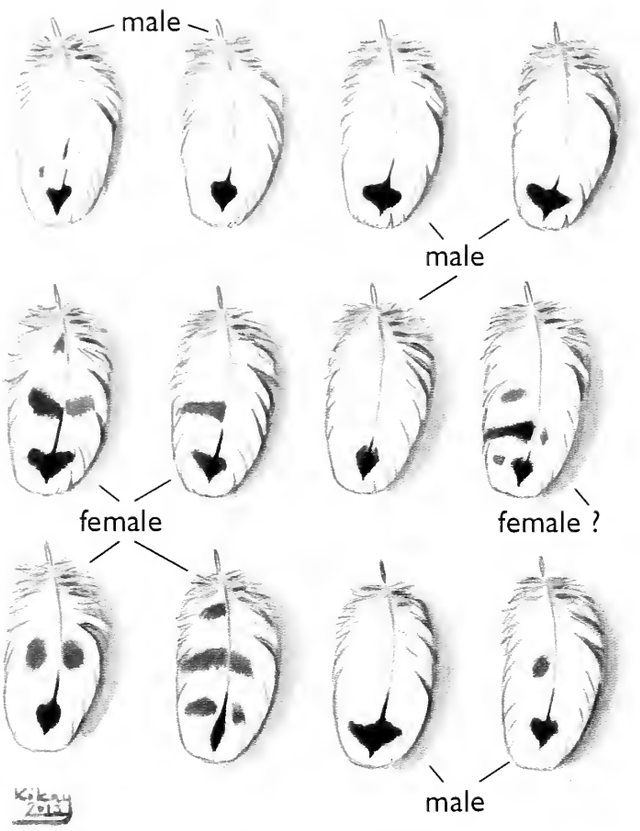

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Fig. 5. Variation in flank feather pattern of adult and 2CY Slender-billed Curlew, drawn from specimens. The upper row shows variation in the classic heart-shaped spot typical of adult males, while the middle and lower rows show less well-known patterns associated with female and 2CY birds, some of which closely resemble the pattern shown by poorly marked Eurasian Curlews.

Moult timing

Juvenile – 2CY

The post-juvenile moult usually begins in December, but may start as early as November (*BWP*; Prater *et al.* 1977; this study). Juvenile plumage is characterised by all feathers being fresh and of the same generation, but the crisp juvenile pattern can become less apparent as the feathers wear and are gradually replaced by adult-type feathers in the post-juvenile moult. During this moult most of the body feathering is replaced, typically including the mantle, rump, scapulars and scattered feathers of the underparts. The extent and duration of moult varies individually; some birds retain almost fully juvenile belly, vent and flank feathering into February and March, while more advanced 2CY birds have attained mostly adult-type underparts by March or April (this study). Replacement of the wing-coverts begins later than body moult, especially the mantle (*BWP*), so contrast between the worn juvenile wing-coverts and fresh upperparts can be apparent from late February onwards.

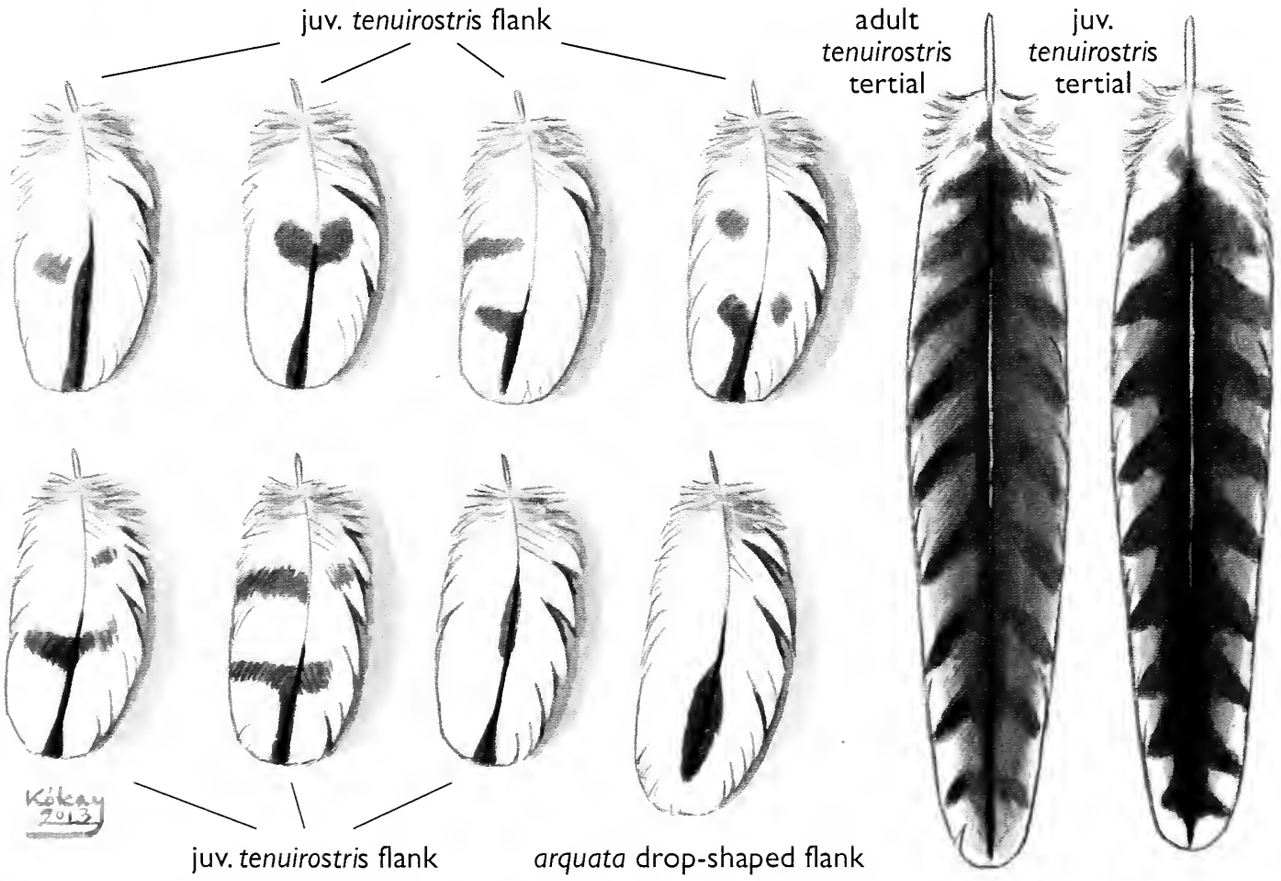

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Fig. 6. Variation in flank feather pattern (seven left feathers) of Slender-billed Curlew, compared with a (drop-shaped) flank feather pattern regularly found in Eurasian Curlew *N. a. orientalis* – and occasionally in *N. a. arquata*. Also note the age-related difference in the tertial pattern of juvenile and adult Slender-billed Curlew (see text). All drawn from specimens.

First-summer

The first complete moult begins at approximately one year old. This moult usually begins earlier than that of adults, typically in late spring to early summer (*BWP*; Chandler 2009). Once moult is complete, first-summers are inseparable from adults.

Adult

Adults have a complete post-breeding moult in late summer or autumn, usually starting in June, which in some individuals may be suspended or arrested during migration, then restarted on the wintering grounds (*BWP*; Prater *et al.* 1977; Chandler 2009; this study). In Eurasian Curlew, adults begin their moult after breeding – *arquata* in early July and *orientalis* from mid August (Cleeves *et al.* 2009).

Separating 2CY from older birds

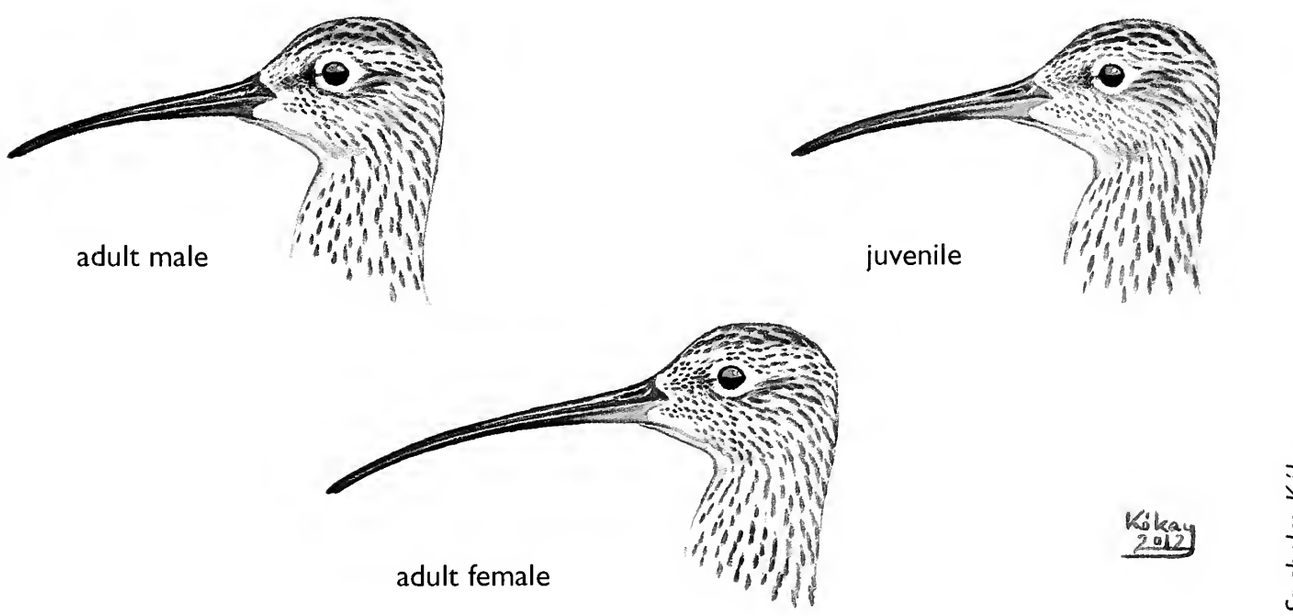
The presence of any retained juvenile feathers should be enough to separate 2CY from adult birds (figs 1, 5 & 6). In particular, some juvenile wing-coverts are usually retained until summer and contrast with fresher, adult-type mantle, scapulars and tertials (this study).

Our examination of specimens suggests that separation of juveniles from older age classes is straightforward up to completion of the post-juvenile moult. We found that the pattern of the scapulars and mantle feathers, and especially the tertial pattern, differs between adults and juveniles (figs. 1 & 6) – the latter show a darker and more solid dark centre, and lack the conspicuous pale indentations that are so conspicuous on the feather edges of adults.

Hayman *et al.* (1986) noted that juvenile Slender-billed Curlews show white tips to eight (sometimes nine) inner primaries, whereas in adults only six (rarely seven) inner primaries are white-tipped. Zenatello & Serra (2002) questioned this character and suggested that the extent and pattern of the white tip of primaries P5–P7 (where the innermost primary is P1) is the most reliable ageing character for Slender-billed Curlew when the pattern of juvenile body feathers/wing-coverts is no longer clear. They illustrated the white tip in juveniles as being more extensive on the outer web, whereas in adults the white tip is either similar on both webs or more extensive on the inner web. This feature is readily apparent in specimens but would be difficult to see in the field.

Sexing

Female Slender-billed Curlews are longer-billed than males, and this is the best character for separating the sexes. After October, juvenile bill length does not differ statistically from that of adults of the same sex (*BWP*): bill length of males is 68–78 mm (mean 72.9 mm, n=21) and of females 82–96 mm (mean 89.9 mm, n=12), with age classes combined. Measurements in Prater *et al.* (1977) are

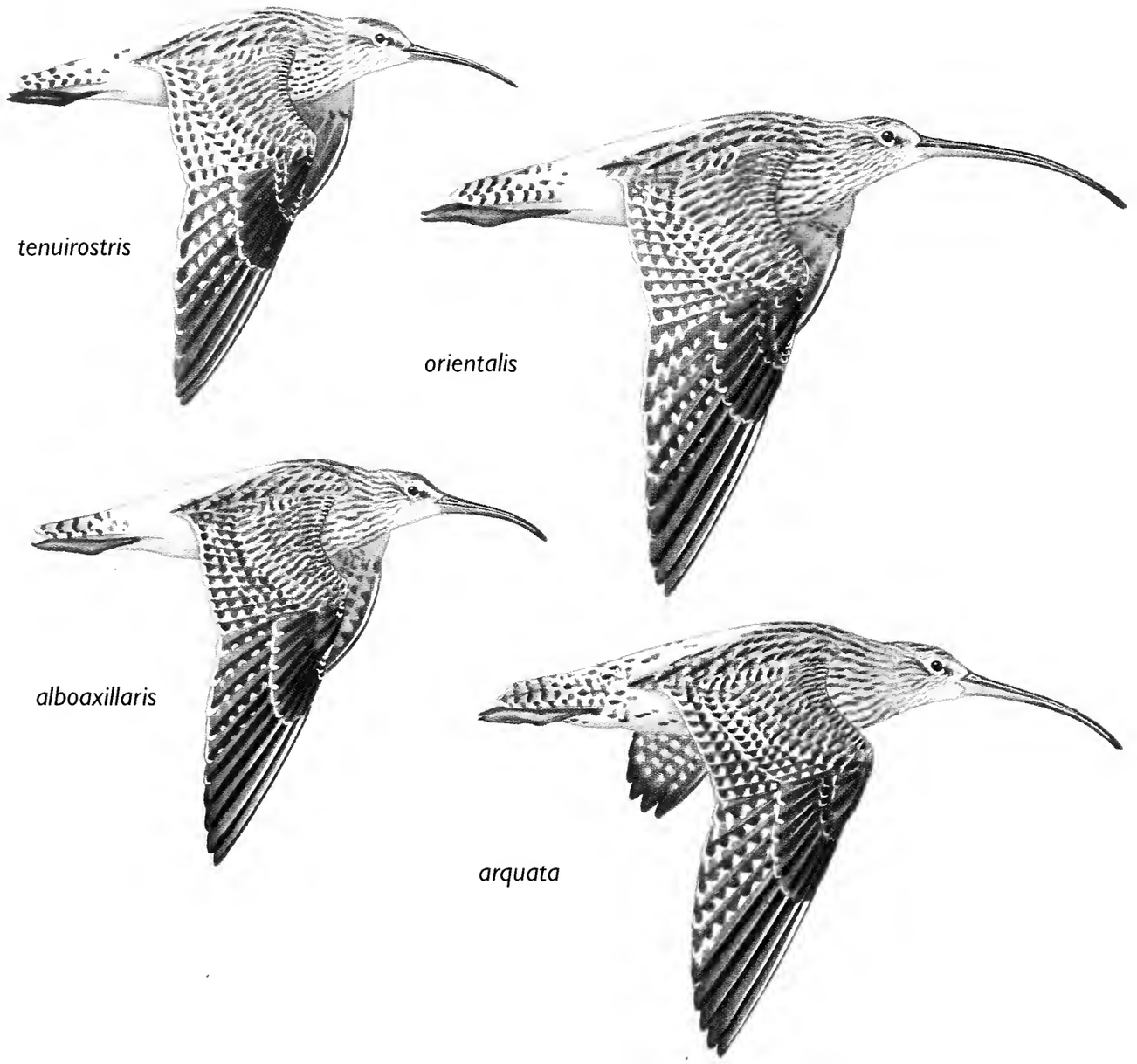


Szabolcs Kókay

Fig. 7. Variation in head pattern and bill length of Slender-billed Curlew. Top left, adult male; top right, juvenile; lower, adult female. The male has a shorter and darker bill compared with the female, and a more contrasting head pattern. The bill is generally darker than in Eurasian Curlew (all taxa) and shows a narrower base. The differences in the head pattern between the sexes are very limited.

broadly comparable: 69–76 mm for males (72.7, n=7), 76–95 mm for females (87.6, n=6; ages combined). However, Serra (1995) found much greater variation in the bill length, with males in the range 66.0–92.6 mm (74.7, n=52), and females 83.0–101.3 mm (89.0, n=29; ages combined). Boano (2009) confirmed this variation in bill length. This greater overlap was also supported by measurements of specimens taken by AC (n=95). This limits the ability to sex birds using bill length alone: only those with a bill length of <82 mm are likely to be male, whereas >93 mm indicates a female. Using bill length only, Serra (1995) was able to sex 83.6% of birds examined (n=61).

Plumage differences between adult males and females are slight. The underparts of adult males typically appear clean and white, with conspicuous, rounded spots, which form distinct rows that flow from the breast onto the flanks, gradually becoming larger (figs. 1 & 5). In addition, males show a better-defined head pattern with a more capped appearance, a cleaner supercilium and greater contrast in the lores (fig. 7). Females often appear duller than males, with sparser underpart markings that are



Szabolcs Kókay

Fig. 8. Upperwing pattern of Western Palearctic curlews in flight. Top left Slender-billed Curlew, top right *orientalis* Eurasian Curlew, bottom right *arquata* Eurasian, bottom left *alboaxillaris* Whimbrel. Note how the secondaries and inner primaries of Slender-billed Curlew have the widest pale bands, creating greater contrast with the outer wing than is the case with the other species. This contrast is further emphasised by the darker (more solidly blackish) primary coverts and primaries compared with the other species illustrated. However, the upperwing pattern is shared with some Eurasian Curlews, particularly *orientalis* but also some *arquata*. Intense light can exaggerate this contrast. Compared with Slender-billed Curlews, small, pale *alboaxillaris* Whimbrels have all the primaries predominantly dark, creating a much more uniform outer wing.

anchor-shaped or triangular (figs. 1 & 5) rather than rounded, while the spots do not form well-defined rows.

Principal identification characters

The literature review yielded 26 characters suggested as useful for the identification of Slender-billed Curlew. From our examination of specimens and photographs we established that only five do not (fully) overlap with characters shown by other curlews and can be considered diagnostic of Slender-billed. These five are discussed below, beginning with the most useful.

1. Pattern and coloration of the underside of the outer primaries

The underside of the outer primaries is uniformly dark, grey or blackish-grey in Slender-billed Curlew; this creates a conspicuous dark wedge to the underside of the outer wing, which contrasts with the paler, almost translucent inner primaries and outer secondaries. On most birds this dark wedge extends from P10 to P7; on some individuals it may reach P8 only, on others it extends to P6. In our opinion, this is the single most important feature for separating Slender-billed from other curlews (figs. 2 & 3, plates 146–153). Published photos of Slender-billed Curlew in flight, e.g. van den Berg (1988) and Porter (2004), confirm just how conspicuous this feature is. It is illustrated in Hayman *et al.* (1986) and Svensson *et al.* (2009), although not mentioned in the text, while *BWP* emphasises that the dark wedge on the underwing is among the main field characters separating Slender-billed from Eurasian Curlew. Of 168 Slender-billed Curlew specimens examined, all showed this pattern.

Eurasian Curlews typically show strikingly pale bases to the underside of the outer primaries, so that a dark wedge is lacking. Although these outer primaries do show darker tips – see figs. 2 & 3, plates 154–161 – the tips contrast with the paler base of each primary. Whimbrel shows an underwing pattern similar to that of Eurasian Curlew (e.g. plate 162).

There is limited variation in this feature. Some Slender-billed Curlews show a narrow, whitish or silvery-grey tongue along the edge of the inner web, extending between half and two-thirds of the feather length, becoming narrowest towards but never reaching the tip (n=42 of 168). Others may show a 'marbled' effect – see fig. 3 (n=22 of 168). We found only three birds that showed a pattern comparable with some of the least-barred *arquata*, with narrow and irregular barring along the inner web of the outer primaries and a darker tip (e.g. plate 148). However, the outer primaries are never barred right along the inner web as in most *arquata*, to create a chequered impression. Additionally, despite this variability, the dark wedge pattern on the underwing remains, although it can appear less obvious than in typical birds. We believe it is mostly females and juveniles that show this pattern.

Commonly, *orientalis* and *suschkini*, as well as presumed intergrades between *orientalis* and *arquata*, show the underside of the outermost primary (P10) uniformly dark, while P9 can frequently share this pattern, or display a barred or marbled pattern at the

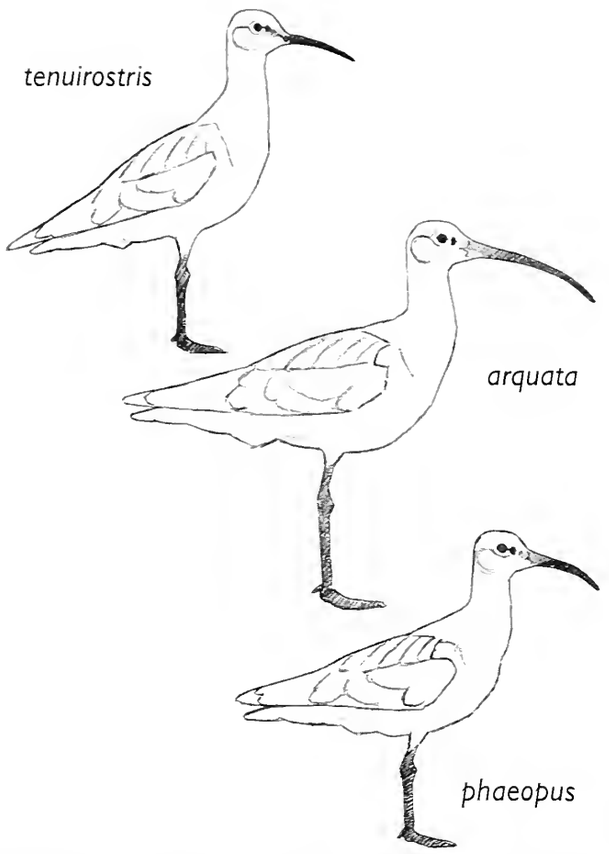
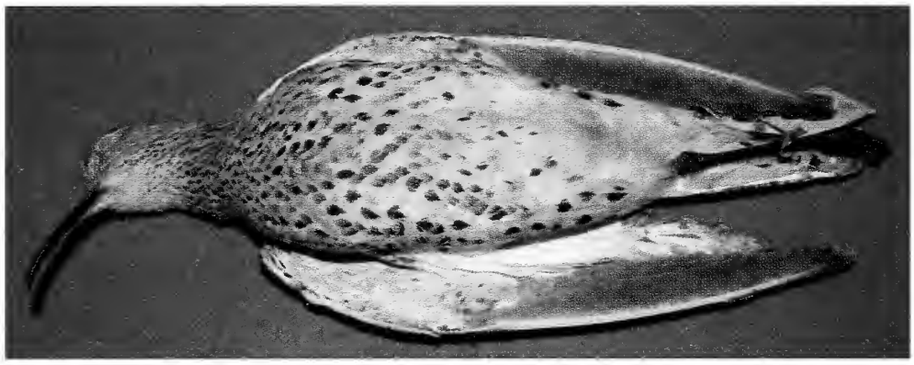


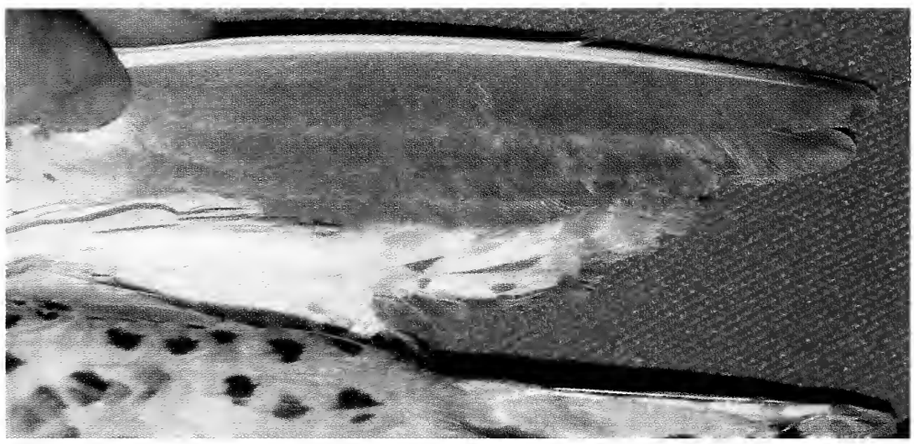
Fig. 9. Sketches illustrating the structure and 'jizz' of Slender-billed Curlew (upper), Eurasian Curlew (centre) and Whimbrel (lower). In Slender-billed, the exposed part of the tibia is proportionately the shortest of all Western Palearctic *Numenius*. Note also the longer and fuller 'thigh' feathering, longer primary projection, and the wing-tip to tail-tip ratio with the wings projecting beyond the tail.

base, and P8 is dark at the base, becoming extensively barred towards the tip (e.g. plates 155 & 156; fig. 3). Several birds thus show a rather uniformly dark appearance to the underside of the three outer primaries, with conspicuous barring or marbling apparent only from the base of P7 inwards (plate 156). Even so, this dusky wedge does not appear solidly dark, as in a typical Slender-billed, and a darker tip contrasts with the rest of the feathers, giving the impression of a dark wing-tip rather than a uniform wedge. A minority of *arquata* may show reduced barring to the underside of the outer primaries (mostly P10–P9), which thus appear rather dusky and uniform but never as extensively dark as Slender-billed. Differentiating between the most strongly patterned Slender-billed and the darkest, most uniform and least patterned *orientalis* requires great care. The underside to the outer primaries can appear surprisingly similar, and all the other characters should be checked to eliminate *orientalis*.

The underside of the outer primaries is conspicuously barred in the vast majority of Whimbrels, though a small minority in each of the three Palearctic races show a dark wedge, similar to that of Slender-billed Curlew (plate 163).

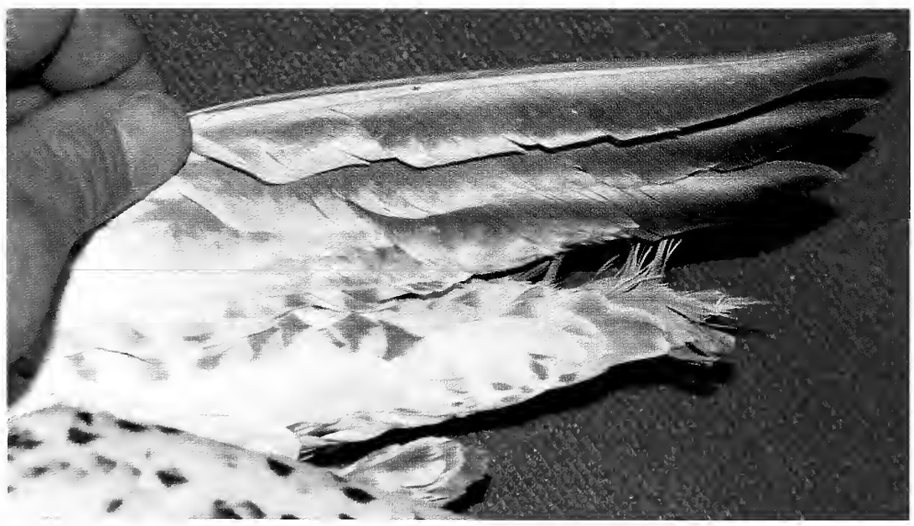


Andrea Corso © MCZR



Andrea Corso © MCZR

146 & 147. Adult male Slender-billed Curlew, fresh body plumage, Lazio, Italy, 23rd March 1898. Typical adult male with densely spotted underparts. Note the uniformly dark underside of the outermost primaries, forming a contrasting dark wedge on the outer wing. There are a few dark markings on the white undertail-coverts, and the longest axillaries, primary coverts and feathering at the carpal joint of some adult males show dark markings, although these are less extensive than in Eurasian Curlew.



Andrea Corso © MCZR

148. Adult female Slender-billed Curlew, Sardinia, Italy, March 1901. Although the outer primaries of this bird are still unpatterned, they show a contrastingly pale 'tongue' along the inner web.

2. Tibia length and feathering

The prominent 'white thighs', formed by long tibial feathering, mean that there is just a short length of exposed tibia. This was first acknowledged as a useful ID feature by van den Berg (1988). This is unique to Slender-billed Curlew and is apparent in both photographs (e.g. Brosselin 1968; van den Berg 1988; Porter 2004) and museum specimens; see also Corso (1995, 2000)(figs. 1 & 9; plates 164, 166, 186 & 187).

Some Eurasian Curlews, particularly *suschkini* and *orientalis*, show longer and more conspicuous tibial feathering than *arquata*

(AC pers. obs.; plate 193). On such birds, however, the exposed tibia is proportionately longer than on Slender-billed (this applies to all races of Eurasian). As the tibial feathering tends to 'stretch' when a bird is walking, this feature is best assessed on a stationary bird.

Exceptionally, Eurasian Curlew may show a rather short exposed tibia, which reinforces the need to use a combination of characters to identify Slender-billed Curlew (plate 192).

Justin Jansen © NMW

149. Female Slender-billed Curlew, age uncertain, Pisa?, Italy, c. 1830. This bird shows the most strongly patterned outer primary found among all Slender-billed Curlews examined. It appears close to the pattern of *arquata* Eurasian Curlew, though the marbling is confined to the proximal area and is less well defined (than Eurasian), with an irregular outline. A similar pattern is found in many *orientalis* Eurasian Curlews. Birds with such a pattern would show a less prominent 'dark-wedge' effect on the underwing.

3. Leg colour

In photographs of live birds, the leg colour of Slender-billed Curlew appears quite dark, blackish-brown or dark lead-grey (e.g. Brosselin 1968, van den Berg 1988, Porter 2004) – see also plates 164, 166 & 186. On museum specimens, leg colour tends to change over time, especially on mounted specimens exposed to light. Specimens that had not been exposed to light showed leg colour between blackish and dark lead-grey (e.g. plates 165 & 173). In adult males the legs are blackish or very dark grey, whereas those of females and immatures are a little paler, typically dark brown-grey. Leg colour was consistently darker than for Eurasian Curlew specimens of similar age and stored in similar conditions. (Eurasian Curlew specimens with discoloured legs can appear to have legs as dark as paler examples of Slender-billed.)

Fourteen juvenile specimens in good condition showed paler legs than adults, never solidly dark or blackish. Five showed greyish legs similar to juvenile *arquata*, the remaining nine slightly darker legs than typical *arquata* and *orientalis*. Most post-juvenile 2CY birds had dark legs, similar to or slightly paler than those of adults (e.g. plates 146, 165 & 173).

Nominate and *orientalis* Eurasian Curlews, and Whimbrels, always have pale lead-grey or bluish-grey legs, sometimes tinged horn brown, or even pinkish (plates 161, 164 & 192). At best, the darkest leg colours among the many photographs we have examined are lead-grey (e. g. plate 193) but never as dark as in Slender-billed Curlew. Juveniles appear somewhat paler-legged than adults. The variability of leg colour in *suschkini* remains uncertain.

In the field, it is important to establish that the legs have not become discoloured in some way, such as with soil or mud. For example, two Slender-billed Curlews filmed by Andy Butler at Merja Zerga apparently showed paler brown legs (www.youtube.com/watch?v=tzlQIhWgb3c). Such coloration is typical of soil staining and atypical for any *Numenius*.

4. Pattern of the tail feathers

Glutz von Blotzheim *et al.* (1977) and *BWP* described the tail of Slender-billed Curlew as white with broken, dark-sepia barring; the former noted some variability and commented that the tail, when fresh, *may* have a brownish wash, but emphasised that a bright, whitish ground colour is unique to Slender-billed (fig. 4, plates 167–169). The outermost and central tail feathers of Slender-billed Curlew (T6 and T1 respectively) show only four or five dark bars, which are less prominent than those on the other rectrices. *BWP* states that the tail feathers of juvenile Slender-billed have narrower and more regularly spaced dark bars than the adult, the outer web having 6–9 bars and the inner web 4–9 bars (in most adults the outer web has 3–6 bars and the inner 1–2 bars).

Hans Gebuis

150. Adult male Slender-billed Curlew, Morocco, January 1991. A typical adult male showing an almost unmarked white underwing, a short, almost straight bill, conspicuous round spots on the underparts, and four unmarked outer primaries appearing as a dark 'wedge' against the paler underwing.

Arnoud B. van den Berg

151. Adult male Slender-billed Curlew, Morocco, January 1988. Here the underwing-coverts appear duller and patterned, probably due to the lighting effect.

Arnoud B. van den Berg

152. Two adult male Slender-billed Curlews with Black-tailed Godwits *Limosa limosa*, Morocco, January 1988. Note the striking contrast between the dark outer primaries, and the paler inner primaries and secondaries. On the upperwing, the solidly dark outer primaries and blackish primary-covert patch contrast with the white shafts on P10 and P9, as well as with the paler inner wing. Note also the black legs and feet.

Eurasian Curlews and Whimbrels exhibit darker central tail feathers, especially when fresh. The ground colour of the outer rectrices may be paler, even approaching off-white, but the colour of the central pair remains a key feature (fig. 4, plate 191). A whitish ground colour to the entire tail is characteristic of Slender-billed.

Museum specimens confirmed that, typically, Slender-billed shows fewer tail bars than Eurasian Curlew. In the latter, the number and width of the bars is variable, with *arquata* showing the broadest and *orientalis* often showing the narrowest and fewest bars, although some *suschkini* approach *orientalis*. In both Slender-billed and Eurasian, the colour of these bars may vary from brownish-grey to blackish (due to individual variation and wear/bleaching).

We found no Slender-billed Curlews with duller central tail feathers, and in all specimens the tail was fully bright white. On average, the central tail feathers of *orientalis* show a warmer ground colour than the other feathers, and when worn these may appear off-white to white (fig. 4, plate 169). Furthermore, some fresh *orientalis* with the palest plumage *can* show a fully white tail (e.g. plate 161). Again, the variability in *orientalis* can lead to overlap with Slender-billed Curlew, so caution is required.

5. Underpart pattern and the shape of the dark flank markings

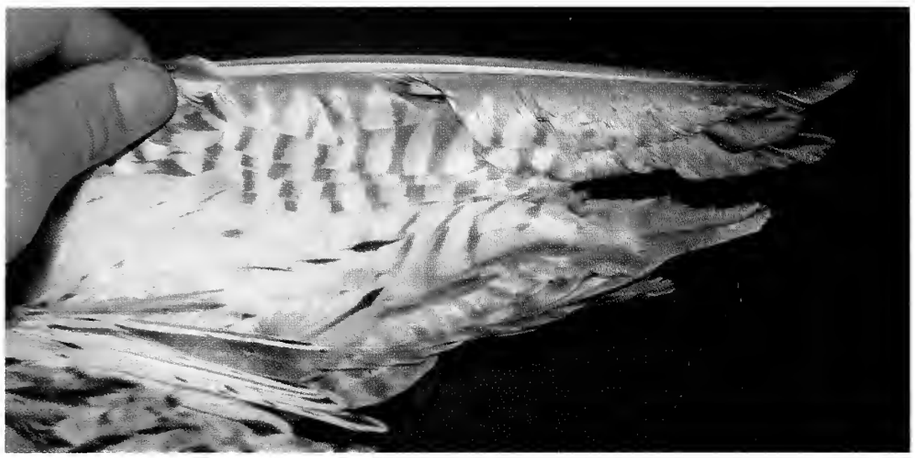
The dark spots on the belly and flanks of Slender-billed Curlew are widely recognised as an important identification feature. These are often described as 'heart-' or 'drop-shaped', and these blackish marks contrast against a clean, whitish ground colour (figs. 1 & 5, plates 146 & 171). This description matches the appearance of most of the available images of live birds, although many photographs depict only a few individuals at Merja Zerga (e.g. plates 166, 186 & 187) and it is important to be aware that there is greater variation in the shape of these spots (Corso 1995, 2000; Serra *et al.* 1995; Steele & Vangeluwe 2002). In particular, the round or heart-shaped dark markings are absent or smaller at the central/basal portion of the feather in juveniles while some adult females sport more oval-shaped dark marks (figs. 5 & 6).

Specimens reveal that most Slender-billed Curlews show a dark subterminal, round to oval mark on the white flank feathers, combined with other dark bar-like markings (figs. 5 & 6; plates 171–175). At a distance, the flanks can take on an indistinctly and sparsely barred appearance, chiefly on female, juvenile and 2CY birds (fig. 1, plate 172); the perception of this barring was tested with specimens observed at a distance through binoculars. The prominence and the width of these bar-like markings are never as broad, regular and conspicuous as those shown by typical *arquata* Eurasian Curlew and *phaeopus* Whimbrel in adult-type plumage, and never appear as anything more than vague.

In juvenile Slender-billed, the dark flank spots of the adult are generally absent, and the underparts and flanks appear dark-streaked against a paler background. Flank and often breast feathers typically show a narrow, pointed shaft-streak distally, with a small, dark spot on both sides of the shaft or one or more bar-like marks (figs. 1 & 6). Typical 2CY specimens examined showed a mix of streaked (juvenile) and rounded (adult) flank markings. After post-juvenile moult, the flanks never appear regularly barred. At best, an advanced 2CY in April will show the mostly rounded flank and underpart spots of adult plumage, but could retain a few sparse, dark streaks on the flanks; these will be difficult to discern, being bleached and worn, and often concealed by overlapping feathers. In a typical 2CY *arquata*, the flank barring is conspicuous before and after the post-juvenile moult, although some show a streaked pattern similar to that of juvenile Slender-billed.

On average, adult female Slender-billed is slightly duller than the male, with off-white or even buffish-tinged underparts, which appear less bright and clean. The contrast between the ground colour and darker spots

153. Adult Slender-billed Curlew, Coto Doñana, Spain, 1898. Note the characteristic underwing pattern with four uniformly dark outer primaries forming a striking dark wedge. Also note the predominantly whitish tail with narrow dark barring and the short, bare tibia.



Andrea Corso © MCZR

154. Eurasian Curlew *N. a. arquata*, north Italy, winter, date unknown. A typical bird, showing deep barring to all primaries. The darker tip of the outer primaries contrasts with the paler base.

Andrea Corso © MCZR

155. Juvenile Eurasian Curlew, probably *N. a. orientalis* or intergrade, northern Italy, 29th January 1897. Note the extensive marbled effect on the underside of the outer primary (see plate 149). In the field, the tips of the primaries would appear darker than the rest of the feathers, forming a dark wing-tip rather than a dark wedge.

Justin Jansen © NHM, Tring

156. Adult male Eurasian Curlew *N. a. orientalis*, Punjab, India, 10th November 1918. This individual shows the darkest and most uniform outer primaries of all taxa of Eurasian Curlew examined, the pattern is almost identical to that of Slender-billed Curlew. The wing-tip forms the darkest part of the underwing, but would be hardly visible against the solid dark wedge.

is less striking, with the dark markings on the underparts being sparser and often less rounded than on males (figs. 1 & 5). A high proportion of female Slender-billed specimens show fewer and less rounded spots than males, with the blackish subterminal mark appearing slightly less 'heart-' or 'drop-shaped' and often more rectangular or lozenge-shaped – and thus closer to the spot shape shown by a minority of Eurasian Curlews (see below; fig. 5; plates 176–177).

Hayman *et al.* (1986), Engelmoer & Roselaar (1998) and Steele & Vangeluwe (2002) remarked that the underparts of *orientalis* and *suschkini* Eurasian Curlew are mostly streaked, thus more similar to juvenile Slender-billed. Steele & Vangeluwe also commented that they were unable to find any *orientalis* with rounded or blob-shaped markings on the underparts; although a few *arquata* showed this, such birds were in a minority.

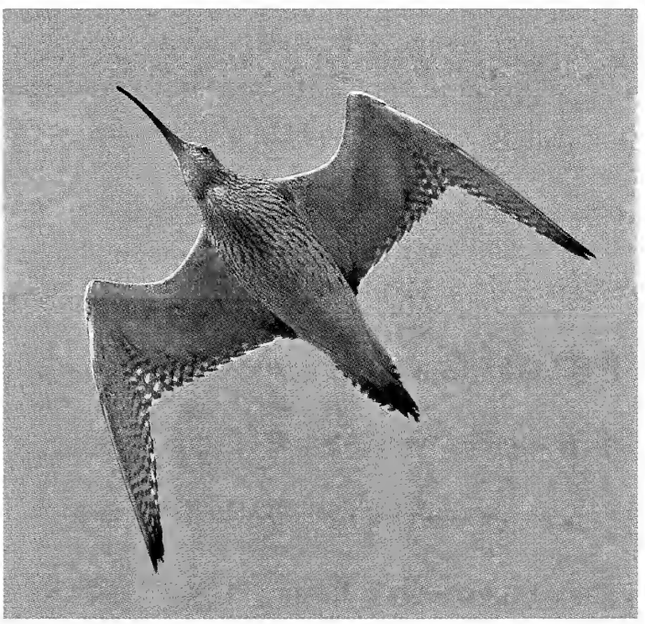
A small minority of Eurasian Curlews studied show rounded flank spots and lack dark flank barring entirely (fig. 6, plates 176–177). Such birds, mostly *orientalis* but also a few presumed *arquata* (collected within the range of that race), include five specimens and at least 17 live birds observed in Italy, Tunisia and Egypt (AC pers. obs.). On these birds, the underparts and flanks

Graham Catley

157. Eurasian Curlew *N. a. arquata*, Lincolnshire, March 2010. A particularly small individual: note the short, narrow bill, and rather short legs. The underwing immediately rules out the possibility of Slender-billed Curlew, in particular the barred outer primaries, with only the tip appearing dark grey.

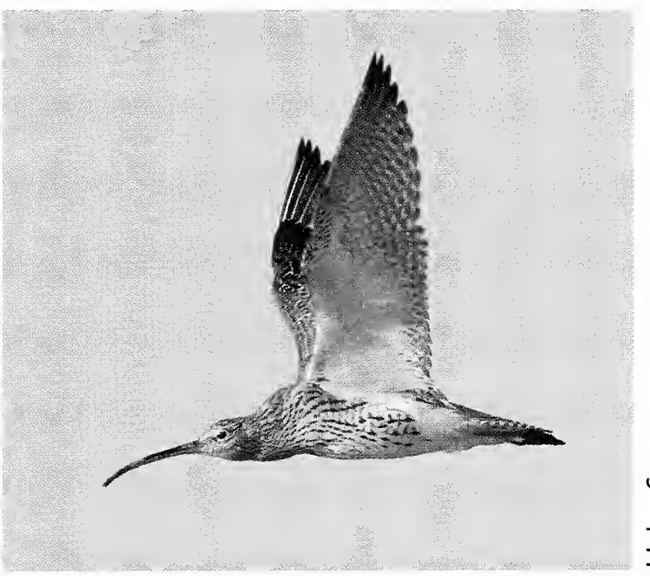
John Dinesen

158. Eurasian Curlews *N. a. arquata*, Indfjorden, Denmark, 30th October 2008. Unusually for Eurasian Curlew, the upper bird, most probably a male, shows an extensively white underwing with unmarked white axillaries, while the two outermost primaries appear quite dark with a slight marbled rather than barred effect. In addition, the flanks show only faint barring, and the bill is rather narrow, light and short, the short legs barely extend beyond the tail-tip. Compared with Slender-billed Curlew, only two outer primaries are dark and the tips to all the outer primaries are darker than the basal colour. The lower bird, probably a female, is a typical *arquata*.



Mervyn Roos

159. Eurasian Curlew, Kamperhoek, Flevoland, the Netherlands, 27th April 2009. This bird was described as being particularly small and pale, and considered by the observer to be *N. a. suschkini*. Note the short, narrow bill; the rather pale underparts, including the white underwing; and the short foot projection beyond the tail. Compared with Slender-billed Curlew, this bird has strongly barred outer primaries, a dull brownish wash to the tail, a bill base that is too broad and dark flank markings that are rather thick (juvenile Slender-billed would show a similar flank pattern but the dark markings would be narrower).



Helge Sørensen

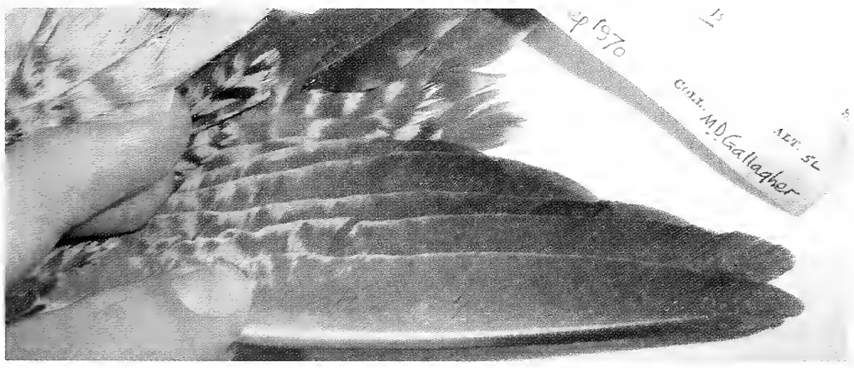
160. Eurasian Curlew *N. a. arquata*, Agersø, Denmark, 16th October 2011. Note the white underwing and axillaries, with just tiny dark subterminal shaft-streaks, a relatively short bill, and conspicuous white shafts to the two outer primaries. However, the bill is deep-based, the outermost primaries are distinctly barred, the underwing primary coverts and carpal area show extensive dark markings and the flanks are boldly barred.

John Holmes

161. Eurasian Curlew *N. a. orientalis* and Avocets *Recurvirostra avosetta*, Hong Kong, 10th December 2012. The underwing pattern is extremely similar to that of some Slender-billed Curlews, but P7 and P6 are more heavily barred, and the outer primaries show contrastingly dark tips. The dark markings on the primary coverts match those shown by Slender-billed Curlew, and the underwing-coverts are almost unmarked white. Notably, the ground colour of the tail of this bird is exceptionally white, even the central rectrices appear white.

Justin Jansen © NHM, Tring

162. Whimbrel, presumably *N. p. alboaxillaris*, Mombasa, Kenya, no date. Note the unmarked white axillaries and underwing-coverts. Compared with nominate *phaeopus*, *alboaxillaris* shows quite clean and pale underparts and a short bill. The outer primaries are strikingly barred below.



Justin Jansen © NHM, Tring

163. Female Whimbrel, race uncertain, Bahrain, September 1970. The outer four or five primaries appear uniformly dark, the pattern thus closely resembling Slender-billed Curlew. For such birds, the head and upperwing pattern, leg colour and bill pattern should readily establish the identity.

show sharply demarcated, rounded spots, although the shape is less round/broad than on typical Slender-billed, with some individual flank feathers showing a dark teardrop or lanceolate streak. The overall appearance of the underparts of these birds, if observed/photographed at distance, is strikingly similar to that of Slender-billed. Separating such birds from Slender-billed Curlew should be straightforward on bill structure alone, yet small Eurasian Curlews, particularly juveniles and 2CY males, which combine such patterning of the underparts with a shorter, almost straight bill, could provide a significant pitfall.

Supporting criteria

If a potential Slender-billed Curlew is suspected, meeting three or more of the principal characters described above, the following supporting criteria may help to reinforce the outcome. In isolation these features are not diagnostic since there is much overlap with other curlews.

Loral pattern

Birds photographed in France (Porter 1984; Duquet 2008), Morocco (van den Berg 1988 and video by Andy Butler) and Yemen (Porter 2004) show solid dark lores (plates 164, 166 & 186). Steele & Vangeluwe (2002) and van Duivendijk (2011) noted that dark lores are more consistent with Slender-billed. Museum specimens reveal this feature to be variable, however, as in Eurasian

Curlew. As a general rule, Eurasian typically has a dark smudge in front of the eye rather than a dark loral line but we commonly found birds of both species with an obvious and well-defined dark loral bar, while others had plain, unmarked lores.

Colour and pattern of the axillaries

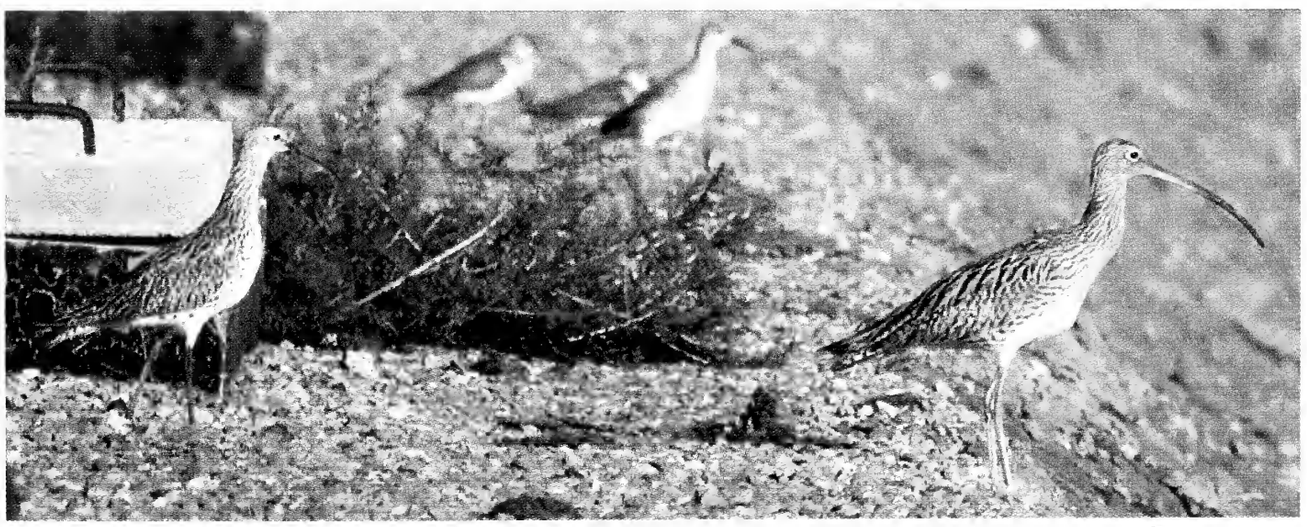
The unmarked white axillaries of Slender-billed Curlew are considered an important identification feature. However, the axillaries are also white in *alboaxillaris* Whimbrel and *orientalis* and *suschkini* Eurasian Curlew, while *BWP* states that some birds within the range of nominate *arquata* show white unmarked axillaries. Variability in the pattern of the axillaries of Slender-billed Curlew has so far not been reported.

Our study established that *arquata* Eurasian Curlew can occasionally show unmarked white or, more commonly, *mostly* unmarked white axillaries. Such birds generally show a few sparse dark markings, mostly restricted to a dark subterminal bar, dark flecking or spotting, and/or a dark shaft-streak (fig. 2, plate 159), but others (n=100) lacked patterning, with fully white axillaries, as in *orientalis* (plates 158, 160 & 179) and *suschkini* (Engelmoer & Roselaar 1998; AC pers. obs.). From specimens and photographs, the colour and pattern of the axillaries is a helpful pointer, but the extent of overlap with other taxa, combined with the difficulty of establishing whether the axillaries truly lack any dark markings, or have only small and restricted markings, makes this a rather unreliable character in the field. In addition, we found no fewer than 60 Slender-billed Curlew specimens with some of the longest axillaries partially patterned, showing small shaft/blob-like black markings (plates 146–148).

Colour and pattern of the underwing-coverts

The underwing-coverts of Slender-billed Curlew are often described as being white and unmarked rather than patterned, yet this feature is shared with *orientalis* and *suschkini* Eurasian Curlew and *alboaxillaris* Whimbrel (e.g. Steele & Vangeluwe 2002).

All *orientalis* we examined showed clean, mostly unmarked underwing-coverts (e.g. plate 161), most *arquata* and *arquata–orientalis* intergrades displayed sparse dark markings on the underwing-coverts – although some showed almost no patterning and thus resembled Slender-billed (plates 158 & 160). Museum specimens revealed at least 20 *arquata* that showed entirely white underwing-coverts. Typically, those with the whitest and cleanest underwing showed obvious dark markings on the underwing primary coverts, sometimes also the marginal coverts at the carpal joint or even the whole carpal patch (fig. 2, plates 157–160). Most



Richard Porter

164. Slender-billed Curlew (left, probably 2CY based on tertial and underpart patterns and contrast between the mantle and wing-coverts), Hodeidah, Yemen, January 1984. This photograph perfectly compares Slender-billed and Eurasian Curlews (right, presumably *N. a. orientalis*). Note the conspicuous blackish legs, obviously darker than those of Eurasian. Note also the conspicuous white 'thigh' feathering, which leaves just a short length of tibia exposed, and the narrow, delicate and all-dark bill. The bird has a pot-breasted appearance, with a small head, relatively long wings which project beyond the tail-tip, and obvious primary projection.

Slender-billed have entirely unmarked underwing-coverts and carpal area, although many show small and usually sparse dusky subterminal marks on the primary coverts and leading edge of carpal patch (plates 150–153).

Establishing the precise extent of white on the underwing in the field is difficult, but this is still a useful feature for birds examined in the hand or from photographs.

Bill

It is widely thought that the bill provides one of the most useful means of separating Slender-billed from other curlews. However, we found that bill shape, size and colour vary to such an extent that there is considerable overlap between Slender-billed and Eurasian Curlew.

Van den Berg (1988), Gretton (1991) and Porter (2004) noted that, in live birds, the bill is almost as dark as the legs, or even darker, and lacks a pale area at the base of the lower mandible (although van den Berg observed that the base of the lower mandible was flesh-coloured in December but entirely black in January). Corso (1995, 2000), Serra (1995) and Serra *et al.* (1995) found that some birds might show a pale base to the lower mandible, up to a third of the length, but not up to half or more as in Eurasian.

Bill shape is widely commented upon, with general agreement that Slender-billed has a less curved and more tapered bill than Eurasian Curlew. Bill length is rather variable, with the longest-billed Slender-billed Curlews comparable with some shorter-billed *arquata*, mostly juvenile or 2CY males.

Owing to age and fading, we could not determine the original bill colour of most Slender-billed Curlew specimens reliably. In those specimens in better condition, dark-billed birds were typical and appeared quite different from specimens of Eurasian Curlew. We found that the extent of the pale area on the lower mandible of Slender-billed was too variable to be diagnostic, although it is less

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165. Differences in leg colour of three Slender-billed Curlews. Left, typical adult male (southern Italy, January 1918); centre, juvenile female (Turkey, 19th December 1867); right, 2CY bird (Sicily, no additional data). The adult male has black legs, the juvenile has paler, greyer legs, while the 2CY bird's legs are becoming as dark as those of the adult.

Arnoud B. van den Berg

166. Two Slender-billed Curlews, Morocco, January 1988. Note the short and delicate bill structure with a very narrow base, the pale supercilium, long primary projection, long tibial feathering with short exposed bare tibia, and dark leg coloration.

Table 1. Bill measurements of the 14 shortest-billed juvenile male *arquata* Eurasian Curlews (collected in October–December) compared with those of 25 female Slender-billed Curlew specimens.

Species	Slender-billed Curlew adult female	Eurasian Curlew *N. a. arquata* juvenile male
Bill length	83.0–102.0 mm (mean 89 mm, n=25)	89–99 mm (mean 95.3 mm, n=14)
Bill width	9.5 mm maximum	9.6 mm minimum
Bill depth	11.5 mm maximum	11.8 mm minimum

extensive than in most Eurasian Curlews.

Museum specimens showed that the bill of Slender-billed Curlew is variable in size and structure (figs. 1 & 7, plates 182 & 183). In a long series of skins, we compared several short-billed juvenile male Eurasian Curlews collected in autumn/winter with some long-billed adult female Slender-billed Curlews. Overall bill length was similar, although the width and depth were always slightly greater in *arquata* (table 1).

Table 1 shows that the smallest *arquata* can show a bill length shorter than the longest-billed female Slender-billed Curlew. In most Eurasian Curlews examined, the bill has a wider and deeper base than that of Slender-billed, and lacks the slim, narrow shape of both sexes of Slender-billed. In a small minority of Eurasians, the bill has a narrow base (plates 180, 181 & 184), and such birds cannot be separated from Slender-billed in the field using bill structure in isolation. Slender-billed Curlew lacks the bill-tip expansion typical of Eurasian Curlew, yet we found several Eurasian Curlews in collections with a modest to almost non-existent lateral expansion (although this may be affected by contraction of the soft part of the bill tip over time).

Eurasian Curlew generally has a more strongly decurved bill than Slender-billed; the Eurasian bill curves for much of its length, initially gradually but increasingly so along the distal half. As an identification feature this was considered unreliable by Serra (1995), and that was further confirmed by our measurements, which found sufficient overlap between the two species to render it unreliable.

Size and structure

Prater *et al.* (1977) and *BWP* state that Slender-billed Curlew is similar in size to Whimbrel, and about 20% smaller and slighter than a full-grown Eurasian Curlew. Van den Berg (1988) described birds in the field in Morocco as appearing 'distinctly smaller and slimmer than Curlew: only slightly larger than Black-tailed Godwit [*Limosa limosa*]'. However, the largest female Slender-billed Curlew can have a wing length that matches that of the smallest male Eurasian Curlew (table 2).

Slender-billed Curlew is typically a distinctly smaller and lighter bird. *BWP* states that juvenile Eurasian Curlews between July and December may be 30–100 g lighter than adults.

Table 2. Comparison of size and structure of female Slender-billed Curlew and male Eurasian Curlew, from *BWP*. Data show range (mean, sample size). Where age is not specified, it is assumed that age classes have been combined.

	Slender-billed Curlew female	Eurasian Curlew male *N. a. arquata*	Eurasian Curlew male *N. a. orientalis*
Wing	adult, 258–274 mm (262, 5)	adult, 276–308 mm (293, 46)	adult, 274–306 mm (292, 12)
Tail	adult, 96–108 mm (102, 5)	adult, 103–117 mm (109, 16)	
Bill	82–96 mm (89.9, 12)	107–129 mm (120, 58)	123–164 mm (136, 23)
Tarsus	64–69 mm (66.1, 12)	71–83 mm (78.5, 21)	74–88 mm (82.3, 18)
Weight	Limited data: September, France, male 360 g, Italy juv. female 255 g	540–900 g (742, 124) in September–October	

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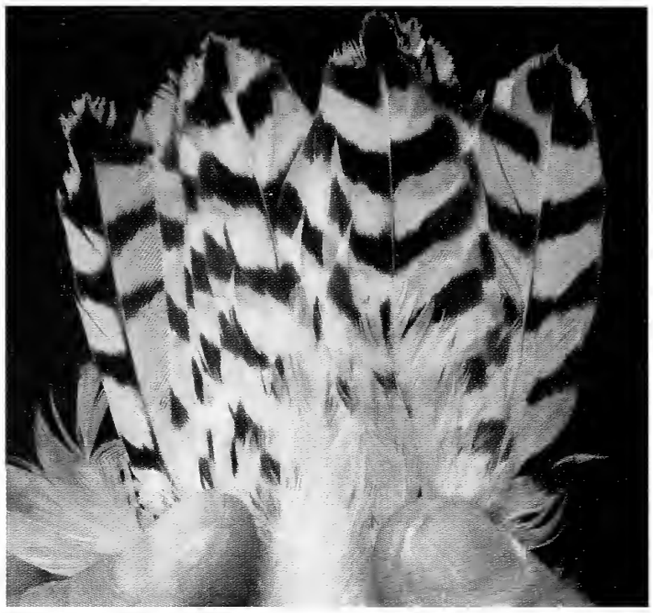
167. Adult female Slender-billed Curlew, Sardinia, Italy, March 1901 (same bird as in plate 148). Note the entirely white ground colour to the tail, with relatively few broad, irregular dark bars.



Andrea Corso © MCZR

168. Adult male Slender-billed Curlew, Rome, Italy, December 1907. Note the white ground colour, and the wider and more regular tail barring compared with the bird in plate 167. Compared with Slender-billed, *arquata* Eurasian Curlew has a brown tone to its tail, this being particularly pronounced on the central pair of feathers (although when bleached, faded or abraded, it appears paler) – see plate 191.

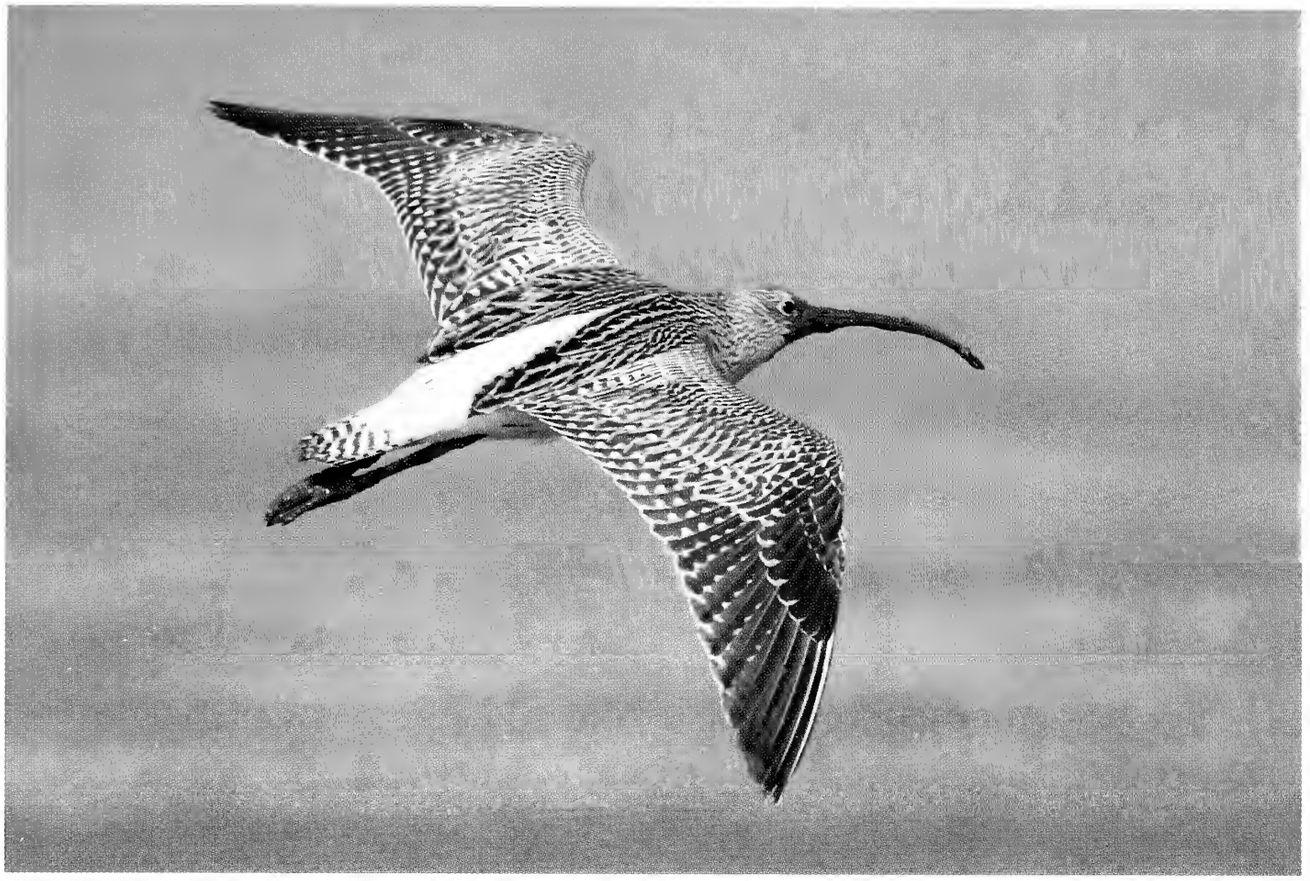
Justin Jansen © NHM, Tring

169. Eurasian Curlew *N. a. orientalis*, Punjab, India, December 1914 (right) and Slender-billed Curlew (left), Germany, May. With wear and bleaching, differences in tail ground colour become negligible.

Size is not always easy to judge, however, and we have observed and photographed small, pale Eurasian Curlews in the Western Palearctic (fig. 2, drawn from the bird in plates 180 & 181) that appeared clearly smaller than a typical Eurasian Curlew. Corso & Marangoni (in prep.) found at least one specimen of a very small bird identified as Eurasian Curlew (plate 185).

Wing-tip to tail-tip ratio

From photographs and video it is evident that the wings of Slender-billed Curlew project beyond the tail-tip (e.g. plates 164, 166, 186 & 187). This feature is usually not visible in Eurasian Curlew, although we have seen a few birds where the wings appeared to project slightly beyond the tail. In specimens studied, this feature is clearly visible (although specimen preparation may have exaggerated the projection). We were unable to determine how effective it might be in the field, but we consider it an important and helpful supporting character.



John Holmes

170. Eurasian Curlew *N. a. orientalis*, Hong Kong, 6th December 2012. The faded ground colour of the tail of this bird appears almost white, while the muddy legs and bill appear almost as dark as those of Slender-billed Curlew

Primary projection

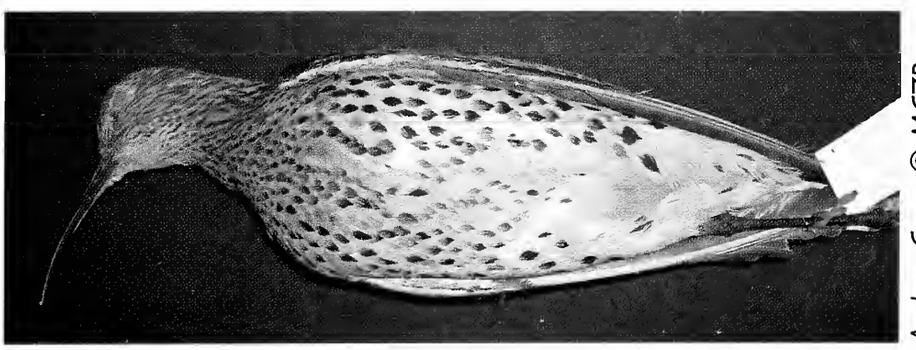
Slender-billed Curlew has a longer primary projection than Eurasian, giving an attenuated appearance to the rear end (plates 164, 166, 186 & 187). From the few good photos where this can be judged, it appears that three or four primary tips project beyond the tip of the longest tertial, while on adult Eurasian Curlew this is limited to two or three.

Establishing the number of projecting primaries from specimens proved difficult, given the variation in extent of abrasion, preparation technique, etc. but 3–4 primary tips seemed to hold true for the best-preserved skins.

Uppertail-covert and rump pattern

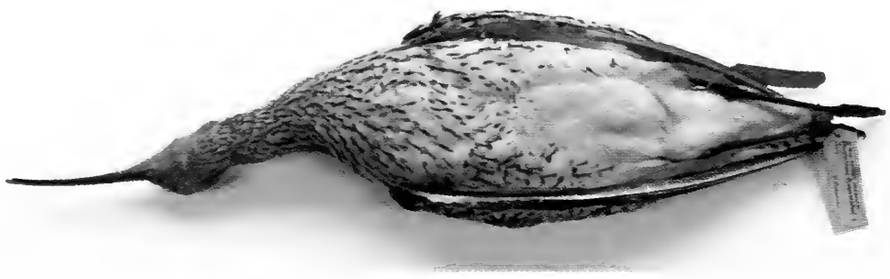
We found that the rump and, especially, the uppertail-coverts are more strongly patterned in Eurasian than Slender-billed Curlew (plates 190 & 191), but with a degree of variation. Generally, the rump and uppertail-coverts are cleaner and brighter white in Slender-billed, with any dark markings being more rounded rather than streaks or bars. However, this pattern is variable in Eurasian Curlew; occasional *arquata* and many *orientalis* show less well-marked rumps, or sometimes an unmarked white rump with (mostly) dark lanceolate shaft-streaks on the uppertail-coverts, but sometimes also dark, round spots as in typical Slender-billed.

We agree with Engelmoer & Roselaar (1998) in that *suschkini* Eurasian Curlew shows a cleaner and less marked white rump and uppertail-coverts than typical *arquata*, thus appearing more similar to many Slender-billed Curlews and *alboaxillaris*



Andrea Corso © MCZR

171. Typical adult Slender-billed Curlew, Tuscany, Italy, March 1909. The dense black spotting is distributed uniformly over the breast, with the spots becoming larger and more heart-shaped on the flanks.



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172. Juvenile female Slender-billed Curlew, Sicily, Italy (no date). Note the extensive, narrow streaking on the throat, breast and flanks, and narrow barring on the lower flanks. The breast shows a duller ground colour compared with that of an adult.

Andrea Corso © MCZR

173. The underparts of three Slender-billed Curlews: upper, 2CY bird (Sicily, no additional data), showing scattered adult-type feathers among otherwise juvenile breast and flank feathers; centre, juvenile female (Turkey, 19th December 1867), showing streaked pattern; lower, adult male (southern Italy, 20th January 1918), showing spotted pattern. All show uniformly dark undersides to the outer primaries.

Andrea Corso © MCZR

174. A particularly long-billed juvenile female Slender-billed Curlew (lower; Sicily, no date), and a juvenile Eurasian Curlew *N. a. arquata* with broken bill from England (August). Note the similarity in juvenile plumage between these two species.

Whimbrel. We also found some Slender-billed with less rounded marks and dark lanceolate shaft-streaks. This character is probably of little value in the field but may be more useful in the museum.

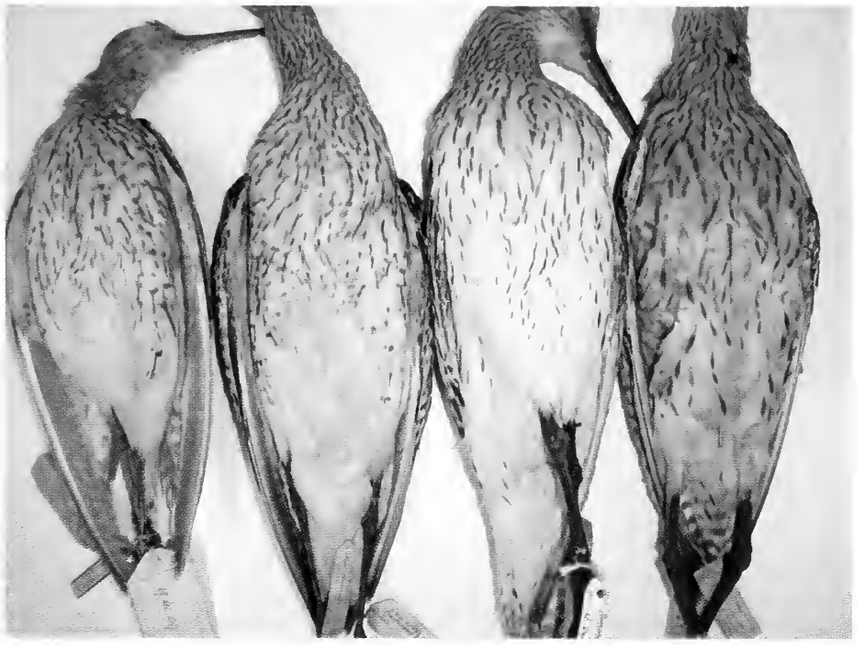
Supercilium

We found that many Slender-billed Curlews show a clean, well-demarcated supercilium, which tends to be better defined in males (plates 164, 166, 182, 183, 186 & 187). It is broader and well defined in front of the eye, with an almost snipe-like appearance, but becomes narrower and more diffuse behind the eye. Not all birds fitted this classic appearance and on some specimens the supercilium extended as far back as the nape, enhancing the capped appearance. Occasionally, Eurasian Curlews show a clean and well-marked supercilium that extends beyond the eye. We examined some specimens of Eurasian (mainly *orientalis*), and have frequently seen birds in the field, with a conspicuous supercilium almost as well marked as in Slender-billed Curlew (e.g. plate 192). Furthermore, no fewer than 45 Slender-billed Curlew specimens lacked a clean, unmarked supercilium (although this is often difficult to judge in skins). At best, this is an indicative feature.

Capped appearance

We concluded that the more capped appearance

of Slender-billed Curlew, albeit well marked in some individuals (plate 186), is rather variable, and often related to the strength of the supercilium (above). We found that many short-billed birds have a more distinctly capped appearance, possibly because the supercilium appears to be wider and cleaner, mostly in front of and above the eye. Some longer-billed females have a warm, brownish-tinged cap, but this is less prominent because it shows little contrast with a duller and more streaked supercilium. Some *arquata* also show a capped appearance and pale supercilium, so this combination of features is not unique to Slender-billed.



Justin Jansen © NHM, Tring

175. Left to right: juvenile female Slender-billed Curlew (Turkey, 19th December 1867), juvenile female Slender-billed Curlew (Sicily, no date), Eurasian Curlew *N. a. arquata*, (age and sex unknown, Essex, December 1895), and juvenile male Eurasian Curlew *N. a. arquata* (Sussex, September 1869). Note the variability in underpart ground colour and similarities between juvenile Slender-billed Curlew and *arquata* Eurasian.

Unreliable criteria

The following characters have, at some time, been proposed as being either supportive or diagnostic of Slender-billed Curlew. We found several of these characters to be misleading and unreliable, and consider that they should play no part in the identification of Slender-billed Curlew.

Andrea Corso © MCZR

176. Underparts of adult Eurasian Curlew *N. a. arquata*, Italy (no other data). The spotted underparts of this distinctive individual lack barring and resemble those of female Slender-billed Curlew.

Pectoral band

On Slender-billed Curlew, the contrast between the clouded streaks on the breast and the spots on the flanks and belly has been variously described as a pectoral or breast band, even likened to that of a Common *Actitis hypoleucos* or Pectoral Sandpiper *Calidris melanotos* (van den Berg 1988; Serra *et al.* 1995; Cleeves 1998). The ground colour of the breast and neck is often regarded as variable, for example being described as grey (Smith 1963), white (Hartert 1912–21; Marchant 1984), light cream (Wijmenga & van Dijk 1985) and pale brownish (van den Berg 1988), although most authors emphasise how lighting conditions affect the appearance of this colour.

Specimens reveal considerable variation in the division between the clouded breast streaking and the cleaner flank and belly spotting, and on several Slender-billed Curlews this breast band is absent. Moreover, a similar underpart pattern can be shown by any taxon of Eurasian Curlew.

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177. Adult female Eurasian Curlew, perhaps an *arquata/orientalis* intergrade, southern Italy (no other data). Some Eurasian Curlews lack flank barring and show a body pattern similar to that of some (female) Slender-billed Curlews. A short-billed, juvenile male would appear even closer to Slender-billed.

Upperwing pattern

Contrast between dark outer and paler inner primaries is mentioned by several authors as a useful field mark for Slender-billed Curlew. From skins and all relevant photographs of live birds, we concluded that Slender-billed shows broader and cleaner white notches on the inner primaries and outer secondaries than most *arquata* Eurasian Curlews (fig. 8; plates 151 & 188). These notches are sometimes so wide that the inner webs of the inner primaries (P1–P6), as well as the outer and middle secondaries, could, in strong light, appear almost entirely white with just sparse, irregular dark barring. Furthermore, the contrast between the outer and inner 'hand' is emphasised by the blackish outer primaries (less dark in an average *arquata*). Yet our field observations of several thousand Eurasian Curlews reveal that a similar pattern is shown by some Eurasian Curlews; mainly *orientalis*, but also *arquata* or intergrades between the two, show a strongly contrasting pattern (fig. 8). Similarly, the presence of contrasting white primary shafts to the outer primaries (P10–P9 sometimes also P8), reported as typical of Slender-billed (e.g. Serra *et al.* 1995), is also commonly shown by Eurasian Curlews, again primarily *orientalis* but also some *arquata*. The upperwing pattern is of little or no value for identifying Slender-billed Curlew.

The upperwing of all races of Whimbrel is quite uniform. Even in the palest *alboaxillaris* (which may initially appear quite Slender-billed Curlew-like), the inner primaries will appear as dark as the outer primaries, or at most show a slight contrast.

Undertail-coverts

In 80 Slender-billed Curlew specimens, 58 had clean white and unmarked undertail-coverts, while the remainder showed limited dark markings (mostly restricted to some dark shaft-streaks on the lateral and longest undertail-coverts, while some showed heart-shaped

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178. The pattern of limited dark markings on the longest axillaries of this 2CY Slender-billed Curlew (Lazio, Italy, March 1900) has not previously been documented for this species – normally they would be entirely white.

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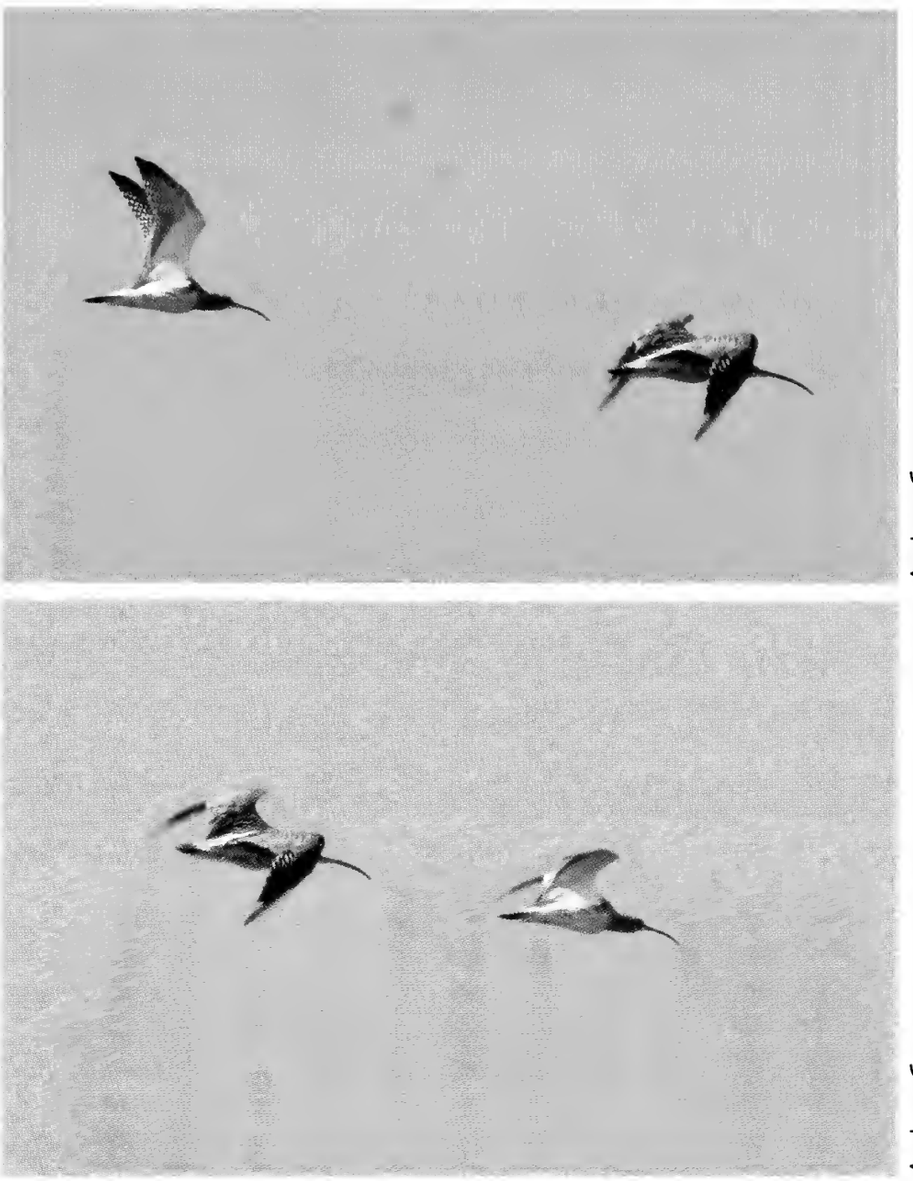
179. Eurasian Curlew *N. a. arquata*, Venezia, Italy, September 1896. The completely white and unmarked axillaries of this Eurasian Curlew match the pattern of most Slender-billed Curlews.

spots similar to those on the belly and vent). Most Eurasian Curlews showed denser markings and more distinctly patterned under-tail-coverts, with the markings being wider and often appearing triangular or barred. Typically, *orientalis* shows unmarked undertail-coverts, often tinged buffish or creamy, but in many cases they are unmarked, clean white, as in Slender-billed Curlew. Putative *suschkini* (AC pers. obs.) also shows unmarked whitish undertail-coverts, while variation among Whimbrels is also marked.



Andrea Corso

Andrea Corso

180 & 181. A very small Eurasian Curlew (left bird in upper photo, right bird in lower), Sicily, August 2010. This was the smallest bird in a flock of c. 150 Eurasian Curlews. It showed an entirely white, unmarked underwing, a short and narrow bill that appeared almost straight in the field, round flank spots, short legs and a pale tail. Similar birds, occasionally observed by the authors and others in the Western Palearctic over the last 20 years, may have resulted in spurious claims of Slender-billed Curlew. This bird was separated from Slender-billed Curlew by the following: pattern of underwing primaries typical of Eurasian Curlew, proportionately longer exposed bare tibia (when observed on the ground), short primary projection, wing-tips falling level with the tail-tip, pale legs and typical Eurasian Curlew call.

Upperparts

We found that fringing and spotting on the feather edges in typical Eurasian Curlew is broader and warmer than on Slender-billed, but we also found that the colour and pattern of the upperparts is highly variable and lacks any identification relevance.

Contrast between mantle, scapulars and wing-coverts

There is no obvious contrast when birds display the same generation of feathers – i.e. all juvenile or all adult. In all 2CY curlews, there is contrast between the fresh body feathers and the retained juvenile wing-coverts after the partial post-juvenile moult, the former appearing darker than the comparatively worn and faded juvenile feathers.

Crown-stripe

In museum collections, we found several Slender-billed Curlew specimens with a narrow and poorly marked crown-stripe. This never approached the contrast or definition shown by even a poorly patterned Whimbrel, including the palest *alboaxillaris*. Eurasian Curlews with a similarly indistinct crown-stripe are not unusual.

Eye-ring

Several authors consider that Slender-billed Curlew displays a conspicuous eye-ring. This is difficult to assess on museum specimens, since its prominence depends largely on the way a skin is prepared and dried. Photographs of Slender-billed Curlews in France (Porter 1984), Morocco (van den Berg 1988)

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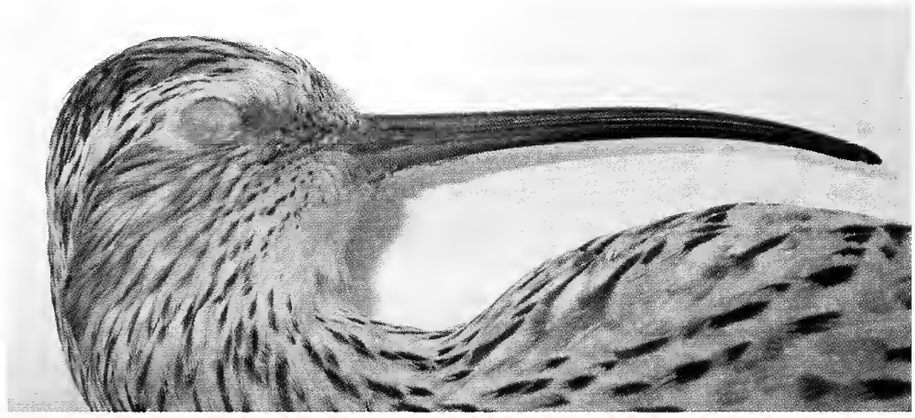
182. Comparison of adult male (left, Lazio, Italy, 23rd March 1898), and adult female (right, Stagno di Nucarninis-Serramanna, Sardinia, Italy, March 1901) Slender-billed Curlews. Frequently, the bill of the female is not only longer than that of the male, but also appears stronger, with a deeper base (more similar to some Eurasian Curlews).



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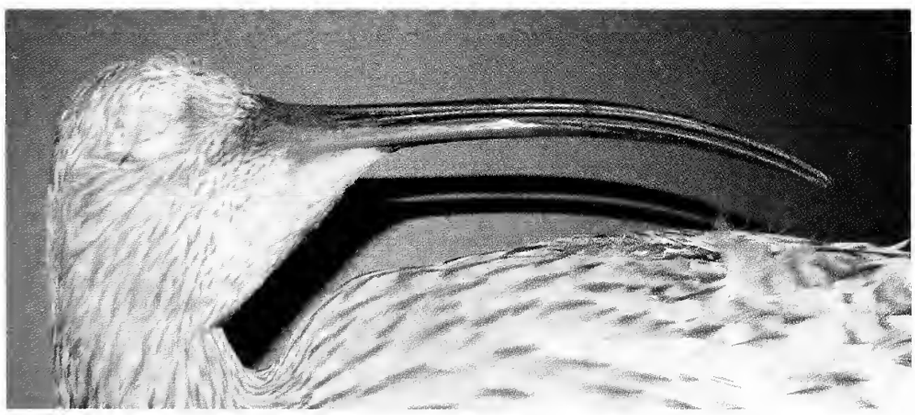
183. Adult male Slender-billed Curlew, Sicily, December 1897. This bird shows a mostly dark bill, which is narrow-based, with a pale area restricted to the base of the lower mandible.



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184. A short-billed adult male Eurasian Curlew *N. a. arquata*, Venezia, Italy, September 1896. Compare the overall length, structure and curvature of the bill of this bird with those of the Slender-billed Curlew in the previous plate. The narrow base and thin tip (with no lateral expansion) is unusual for Eurasian Curlew, and the pale area at the base of the lower mandible is fairly restricted and resembles that of some (mostly female) Slender-billed.

and Yemen (Porter 2004) show a distinct eye-ring. However, a photo of Eurasian Curlew in Yemen (Porter 2004) shows it to have a more conspicuous eye-ring than that of the accompanying Slender-billed Curlew (plate 164). The prominence of the eye-ring is undoubtedly influenced by contrast with the dark eye-stripe, being most pronounced when the surrounding feathering is darker. Field observations of Eurasian Curlew, especially *orientalis*, reveal that the prominence of the eye-ring does not differ significantly from that of Slender-billed Curlew in photos, and may occasionally appear better marked.

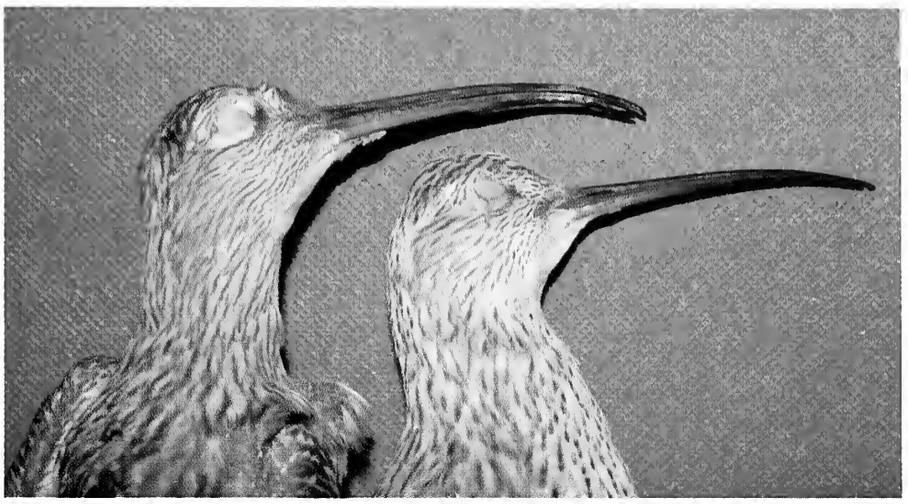
White chin

A well-defined white chin patch has been suggested as a feature of Slender-billed Curlew. Specimens show that the extent of white on the chin and throat varies and, although we have not encountered a bird in which it extended under the ear-coverts, the extent of overlap among the different curlew species renders this feature of little use for identification.

Foot projection

We are unable to confirm that foot projection beyond the tail of Slender-billed Curlew differs from that of other curlews (Cleeves 2002; Steele & Vangeluwe 2002). Being shorter-legged, Slender-billed Curlew should in theory have a shorter foot

projection than Eurasian, especially the longer-legged *orientalis*. Yet during field observations of Eurasian Curlews, we have seen birds showing almost no foot projection (e.g. plates 157 & 160).



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185. Adult male Slender-billed Curlew (right, Maccarese, Rome, Lazio, Italy, 23rd March 1898) compared with a small juvenile *Numenius* (left, Veneto, northeast Italy, 1st August 1896). The identity of the latter is believed to be Eurasian Curlew but it shares many features with Slender-billed, including similar overall measurements, a very short and narrow bill, and an outer primary pattern that closely matches that of Slender-billed. Other characters are a better fit for *arquata* Eurasian, including the deeper base to the bill. A DNA sample has been taken and the findings will be published when available (Corso & Marangoni in prep.).

Potentially useful characters

The following features could potentially be useful in identifying Slender-billed Curlew and they are described briefly here, for completeness.

Voice

The only recording of an undisputed Slender-billed Curlew was made by Adam Gretton in January 1990 at Merja Zerga (Chappuis 2000). In this the bird gives a familiar 'cour-lee' call, similar to that of Eurasian Curlew, but is sweeter, higher-pitched, faster and towards the end becomes a giggling trill. A flight (alarm?) call is sharper and shorter 'cu-ee'. The last of these wintering Moroccan birds were thought to be adult males, and we are not aware of any difference among the calls given by females, or other age classes (Tom van der Have *in litt.*). The recordings said to be of Slender-billed Curlews from the flock reportedly observed in Italy in January 1995 (Serra *et al.* 1995; Chappuis 2000) are actually of Eurasian Curlews (van den Berg 2001; M. Robb pers. comm.).

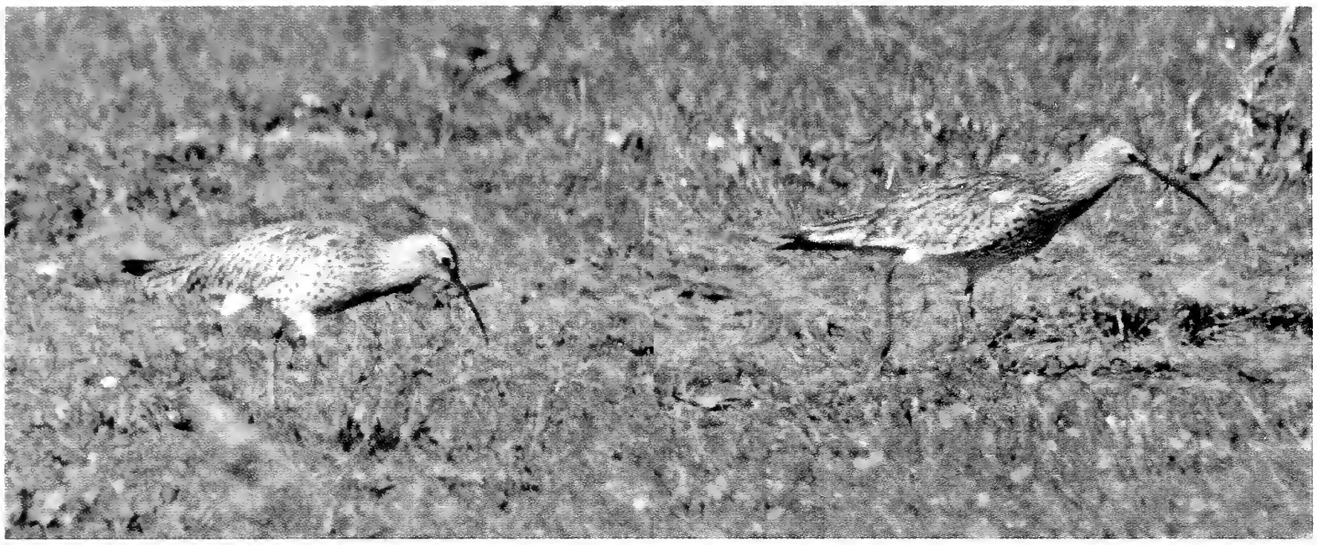
Jizz

Many authors describe the jizz of Slender-billed as different from that of Eurasian Curlew. For example, Steele & Vangeluwe (2002) described the head of Slender-billed Curlew as appearing more 'angled' with a square nape or rear crown, while Serra *et al.* (1995) remarked that 'they usually adopt a more upright posture than other curlew species'.

Based on observations of Slender-billed Curlew by Brosselin (1968), Porter (1984, 2004), van den Berg (1988), Corso (1996) and Duquet (2008), we have distilled the following digest of jizz and behaviour – these are inevitably indicative at best in terms of identification. Compared with Eurasian, Slender-billed has an elegant character, with a well-proportioned body, more compact as a

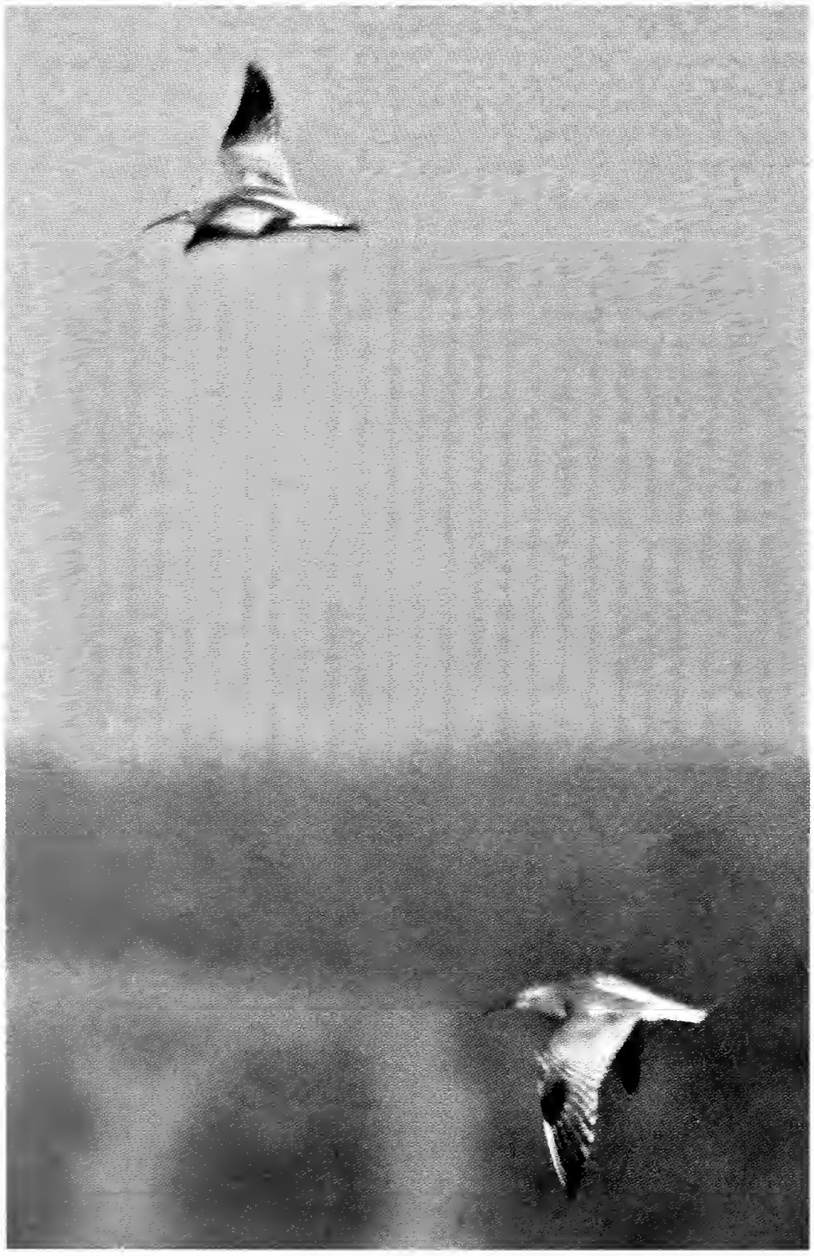
Hans Gebuis

186. Slender-billed Curlew, Morocco, January 1991. This photograph nicely illustrates the short exposed tibia and long 'thigh' feathering, the long primary projection, and the head pattern (with a broad, clean supercilium, dark lores and capped appearance). The legs are dark grey-brown rather than blackish, possibly due to staining and/or the bright light. Note also the rather short, thick-necked appearance, similar to that of Whimbrel.



Hans Gebuis

187. Two Slender-billed Curlews, Morocco, January 1988. The slim appearance creates an attenuated jizz quite different from that of the much heavier Eurasian Curlew.



Hans Gebuis

188. Two Slender-billed Curlews, Morocco, January 1988 (same birds as in plate 187). Note the contrasting, almost black-and-white, effect of the upperwing. In strong light many Eurasian Curlews, particularly *orientalis*, show a similar effect. This image emphasises how the pattern of the outer wing depends on wing position and light; here, the upper bird shows a more uniformly dark outer wing with less contrast.

result of its shorter neck and legs, although the slimmer rear end of the body (with a longer primary projection and the wing-tip projection beyond the tail) gives an attenuated structure. It has a generally less hump-backed and a more pot-breasted (rather than 'pot-vented') appearance than Eurasian (fig. 9). In flight, the wings are narrower and show a more pointed 'hand'. The wing action is fast, probably faster than in Eurasian Curlew, with quicker wingbeats. The gait is reported as being fast, with a walking style closer to that of the smaller shorebirds and lacking the ponderous, slow and alert character of Eurasian. Van den Berg (1988) mentioned 'movements not much different from those of Black-tailed Godwit, with two to three steps per second while watching soil, and, every two to four steps, pecking to ground'.

An open question: some small curlews that resemble Slender-billed Curlew

At this point we would like to draw attention to field observations in Italy, mostly from Sicily and Puglia, and also to specimens held in the Museo Civico di Zoologia di Roma (MCZR), in

Rome and two private collections, of unidentified curlews that are smaller than any of the known races of Eurasian Curlew and are comparable in size with Slender-billed Curlew (Corso & Marangoni in prep). These birds also show an unmarked white underwing, narrow bill, and white rump (though with wider and more obvious dark markings than in typical Slender-billed) and undertail-coverts with few or no detectable markings (see fig. 2 drawn from the birds in plates 180–181 & 185 and field notes by AC). Most also show a distinctively pale tail, with only the central rectrices being slightly duller, and thus not clean white as Slender-billed shows. We believe these birds to be Eurasian Curlews but have failed to assign them to a specific race (short-billed *suschkini* could be involved although the bill would be significantly shorter than the literature suggests). The call of these birds fitted that of Eurasian Curlew, the underside of the primaries was fully barred (or at least showed more extensive barring on the inner primaries than would be typical for Slender-billed), the legs were pale, lead-grey and the bare tibia proportionally similar to Eurasian Curlew. Very few observers are aware of the existence of these birds and their identification has not been discussed in the literature. Such birds are likely to confuse even the most experienced observer unaware of the potential pitfall.

Andrea Corso © MCZR

189. Adult male Slender-billed Curlew in fresh plumage, Lazio, Italy, 23rd March 1898. This bird shows a typically bright, unmarked rump and lower back, white uppertail-coverts, the longest showing a narrow, dark lanceolate shaft-streak.

Andrea Corso © MCZR

190. Adult female Slender-billed Curlew, Sardinia, Italy, March 1901. This bird shows stronger patterning on the rump and uppertail-coverts, with dark markings matching those on the underparts.

Andrea Corso © MCZR

191. Adult male Eurasian Curlew *N. a. arquata*, Venezia, Italy, September 1896 (same bird as plates 179 & 184). This bird shows heavy barring on the uppertail-coverts and a strong brownish wash on the central rectrices.

Discussion and conclusions

Given the degree of overlap in many of the characters we examined in this study, eliminating an unusual or atypical Eurasian Curlew is the critical first step in identifying Slender-billed Curlew (either when assessing

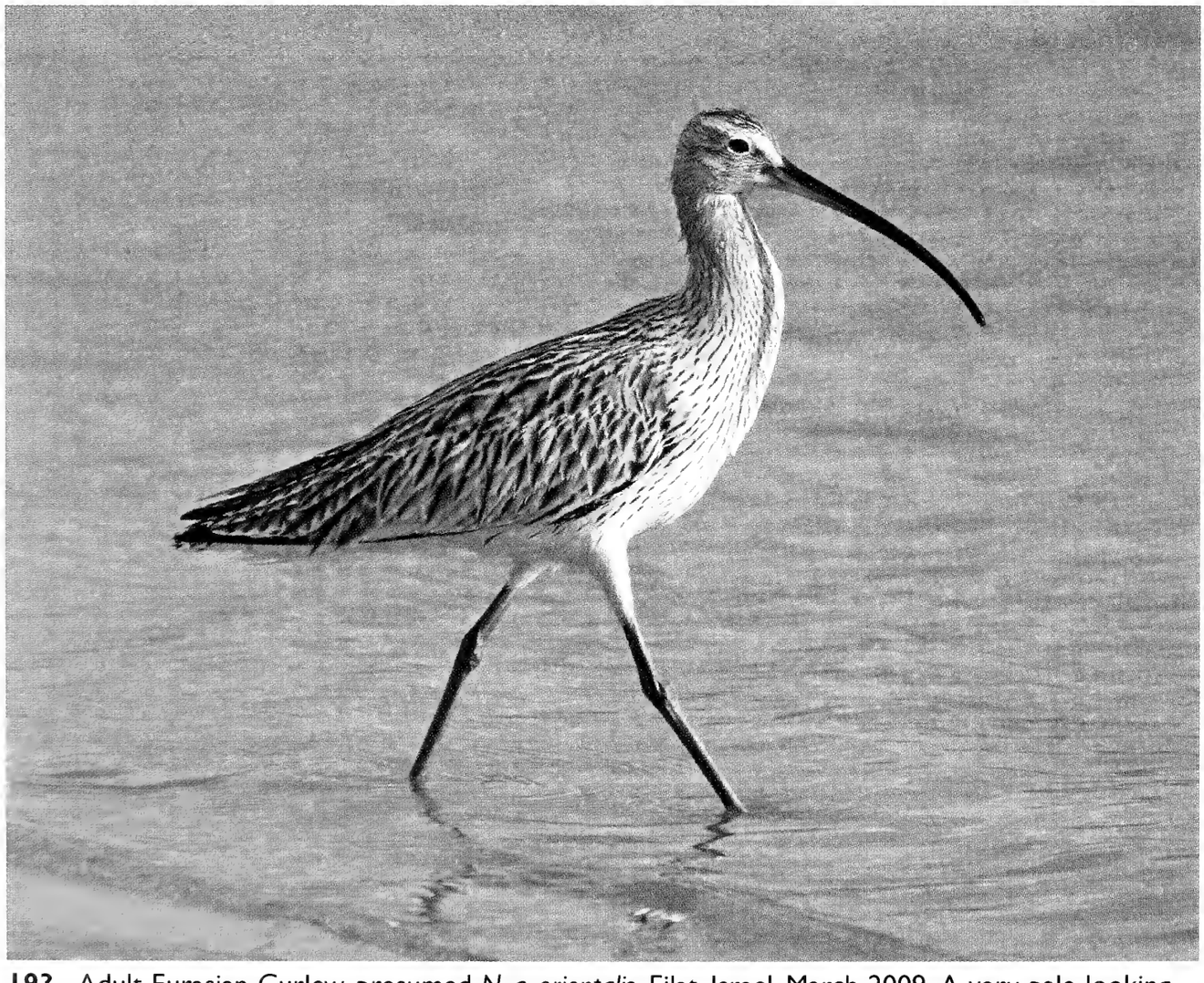
Graham Catley

192. Eurasian Curlew *N. a. arquata*, Lincolnshire, March 2010 (same bird as in plate 157). The upright posture of this small individual might initially be confusing in the field at distance. The bill has a fairly narrow base and is unusually short for Eurasian Curlew, and the pale grey legs show a relatively short exposed tibia.

old records or when judging a contemporary one). Some (ideally all) of the principal identification criteria should be established as being consistent with Slender-billed, along with as many of the supporting characters as possible. Nowadays, without supporting photographs and/or sound recordings, any claim of this critically endangered curlew will inevitably be treated with some scepticism.

We agree with van den Berg (1988) and Mlíkovský (2004) in believing that several birds identified as Slender-billed Curlew and published as such in the literature are misidentified Eurasian Curlews, some being short-billed immature male *arquata* or *orientalis* displaying a clean white underwing and a contrasting upperwing. The extent of variation within the central Asian *alboaxillaris* Whimbrel and *suschkini* Eurasian Curlew requires further investigation.

A re-evaluation of *all* records from countries outside the traditionally accepted range is required, together with recent (post 1990)



Remo Ciuffardi

193. Adult Eurasian Curlew, presumed *N. a. orientalis*, Eilat, Israel, March 2009. A very pale-looking bird with narrowly streaked underparts. Note that, chiefly when a bird is walking, the tibial feathering ('thighs') may appear long, as in Slender-billed Curlew, although less conspicuous and 'full'. The exposed tibia is typically long. This bird has unusually dark legs.

claims from countries within the recognised breeding and wintering ranges, and from the migration routes. The acceptance criteria of rarities committees should be re-evaluated and strengthened so that only those records that meet the highest standards are accepted.

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AC gives special thanks to Carla Marangoni for the continuous help and assistance given during regular visits to the Museo Civico di Zoologia di Roma (MCZR), Rome, Italy, where one of the largest collections of Slender-billed Curlew material is preserved. Our thanks also go to the staff at the following museums and collections who kindly assisted and made available the specimens for examination: Mark Adams, Katrina and Hein van Grouw and Robert Prŷs-Jones (Natural History Museum (NHM), Tring, England); Anne Prévatio (Musée National d'Histoire Naturelle (MNHN), Paris, France); Steven van der Mije (Naturalis Biodiversity Center (NBC), Leiden, the Netherlands); the late Angelo Priolo (Museo di Randazzo (MZR), Catania, Italy); Francesco Pezzo (Museo di Storia Naturale dell' Accademia dei Fisiocritici (MUSNAF), Siena, Italy); Enrico Borgo (Museo di Storia Naturale 'Giacomo Doria' (MSNGD), Genova, Italy); Giovanni Boano and Claudio Pulcher (Museo Regionale di Scienze Naturali di Torino (MRSN), Torino, Italy). For the loan of photographs we would like to thank: Arnoud B. van den Berg, Graham Catley, Remo Ciuffardi, Claudio Crespi, Davide Damico, John G. Dinesen, Hans Gebuis, Luciano Gelfi, John Holmes, Toy Janssen, Cristiano Liuzzi, Daniela Papi, Massimo Piacentini, Richard Porter, Costantino Puglisi, Giuseppe Rannisi, Mervyn Roos, Boudewijn Schreiner, Helge Sørensen, Emanuele Stival, Giuseppe Tavolaro, Claudio Torresi and Adalberto de Walderstein. Our apologies go to anyone who assisted in our research but who we have inadvertently omitted here.

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Andrea Corso enjoys travelling around the Western Palearctic, focusing in particular on the fauna of the southern Mediterranean region and North Africa. He has a special interest in raptors, which he studies on migration in his native Sicily, and his travels have enabled him to develop new criteria for their sexing, ageing and identification, both in the field and in museums. He is currently working on a field guide to the most difficult bird species in the Western Palearctic. **Justin Jansen** has used his extensive field knowledge to further his research into difficult identification problems. This has led him into the field of museum research where challenging identification issues and bio-historical topics are of particular interest. **Szabolcs Kókay** is a wildlife artist who lives in Budapest and has been a full-time bird illustrator since 2001. A member of the Society of Wildlife Artists, he won the '*Birdwatch* Artist of the Year' competition in 2008 and since then has illustrated numerous books, posters and magazines.

Notes

Abnormal number of eggs in a Water Rail nest

During 2013, I monitored a breeding population of Water Rails *Rallus aquaticus* in the Mazurian Lake district of northeast Poland. On 2nd May, I found a nest with six eggs in a patch of Common Reed *Phragmites australis* at a small pool. On 7th May, there were 11 eggs in the nest. On 12th and 18th May there were still 11 eggs, and I considered this number a full clutch. The incubation period for Water Rails lasts for 19–22 days after the clutch is complete (Taylor & van Perlo 1998), so I assumed that the eggs might start to hatch on 26th May. When I checked the nest that day, I was surprised to see a bird incubating no fewer than 18 eggs (plate 194). The next day a camera trap was set near the nest, and it was monitored constantly from that point on. On 29th May, 11 chicks hatched, and they remained in the nest until 1st June. The seven 'extra' eggs remained in the nest, but were not incubated after 1st June. After that, the adult birds appeared at the nest occasionally, but on 6th June they removed the extra eggs – some were first destroyed and even eaten.

Jan Jedlikowski

194. Water Rail *Rallus aquaticus* nest with 18 eggs, northeast Poland, May 2013.

The literature suggests that clutch size in the Water Rail varies from four to 13 eggs, mean 7–8 (Glutz von Blotzheim *et al.* 1973; Bayliss 1985; Jenkins 1999). The largest clutch was reported by Witherby *et al.* (1948) (and followed by *BWP* and Taylor & van Perlo 1998) as 'rarely up to 16' eggs, although there is no detail of how many clutches greater than 13 are known.

Since the seven extra eggs appeared 12 days or more after presumed completion of the 'normal' clutch (between 19th and 26th May), one explanation for this situation is intraspecific brood parasitism. There appears to be no published evidence for this in the Water Rail, but it is widespread among waterfowl and other rails, such as Common Coot *Fulica atra* and Moorhen *Gallinula chloropus*. At the same pool I recorded a second pair of Water Rails but could not find the nest. I can only speculate that the second pair lost its clutch and decided to lay a replacement clutch in the neighbouring nest.

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Carrion Crows nesting on the chimney stack of an occupied house

Carrion *Corvus corone* and Hooded Crows *C. cornix* generally make their nests in trees but where trees are scarce they will use alternative sites such as cliff ledges, electricity pylons or even the ground (*BWP*). Nesting on buildings has occasionally been reported in the Hooded Crow in mainland Europe (e.g. Londei & Maffiola 1989), and the Carrion Crow in the UK – for instance, nests in the spire of the House of Commons (Suffern 1950) and on the chimney stack of derelict coastguard houses in East Sussex (see Macgregor *et al.* 1956).

On 14th May 2013, in Thurso, Caithness, I came across a bulky and untidy nest of sticks on the chimney stack of an occupied house in Pentland Crescent, on the northern edge of the town overlooking the Pentland Firth. Almost immediately, a Carrion Crow appeared and settled itself deep into the nest. Its mate, perched on a nearby house, showed the dark grey belly and back typical of a Carrion Crow × Hooded Crow hybrid. Both birds were still present three days later when I returned to take some photographs. The nest was in a space at the northeast corner of the chimney stack, sheltered a little from the prevailing westerly winds by the chimney pots. What few trees there were within 500 m of the site were mostly occupied by Rooks *C. frugilegus*.

Such behaviour is unusual and, in the light of how the habit of roof-nesting by gulls has spread in urban areas, it seems worth placing on record.

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Dipper nesting strategy in prolonged cold weather

In common with most of the UK, spring 2013 was late and cold on the River Greta in Cumbria, and Dippers *Cinclus cinclus* began nesting later than normal. The nesting period of one pair studied lasted some 84 days, during which time no fewer than four nests were built. This pair first began nest-building on 18th March and by 20th March their nest, on a steel girder of the superstructure beneath a disused railway bridge spanning the Greta (about 130 m above sea level), was half complete. That nest progressed no further during a period of extremely cold, snowy weather and in due course was abandoned. The pair remained on territory, and eventually started a second nest below the same bridge; it was about half built on 20th April and nest-building stopped shortly after. That nest was also abandoned, as was a third (completed and lined) nest at the same site. The pair's fourth nest, on the rock face of a small side stream, about 300 m downstream of the bridge, contained three newly hatched young (and an egg) on 22nd May; four young fledged successfully from this nest on 9th June.

Dippers on the adjoining territory, with a nest built beneath an old packhorse bridge over a small tributary stream, adopted a similar stop-start strategy, although only one nest was involved. Three young fledged successfully from this particular nest on 20th June, some 93 days after the first record of nest-building.

The impact of cold spring weather on the nesting cycle is perhaps not surprising, although the building of four nests during repeated weather-induced delays seems worth placing on record.

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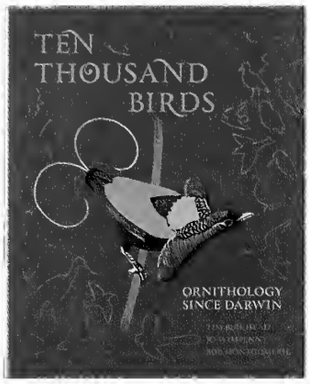
Reviews



Ten Thousand Birds: ornithology since Darwin

By Tim Birkhead, Jo Wimpenny and Bob Montgomerie
Princeton University Press, 2014
Hbk, xvii + 524pp; photos, illustrations and artwork throughout
ISBN 978-0-691-15197-7 Subbuteo code M21765
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Darwin's writings changed biology forever and the publication of his *On the Origin of Species* in 1859 makes a sound starting point for this latest book on the history of ornithology. Although evolutionary thinking took a while to permeate throughout ornithology, it has underpinned much of our research during the last century. Large-scale collecting, systematics and palaeontology give us a phylogenetic framework within which we can understand avian biodiversity, create predictable hypotheses in ecology and behaviour and frame conservation strategies. For 50 years after *The Origin*, collecting and describing new species, often highly competitive activities, dominated, and attempts to create meaningful classifications continue to the present. The transition from an emerging science based on faunistics to more 'biological' forms of enquiry was painful for some and intensely rewarding for others. All along there are fascinating personal stories of success and failure, mixed with occasional tragedy and comedy.

In *Ten Thousand Birds*, the authors explore 11 important topics in ornithology within their historical settings. Each starts with an evocative piece of artwork and includes a full-page timeline as an overview. Several different aspects of each topic are explored, the key developments are fleshed out with personal details of the main characters to put a human face on the science. This is followed by usually two, two-page autobiographical contributions by well-known figures who have been active in the relevant area.

The chapters themselves cover palaeontology, evolutionary biology and speciation, systematics, migration, breeding adaptations, form and function, ethology, behavioural ecology, sexual selection, population ecology and conservation. The writing is clear and elegant and the diversity of subject matter ensures that there is something to interest everyone. More than that, the authors provide an excellent overview of ornithological science as it is today. The authors interviewed many of the main scientists involved over the last half-century and the backgrounds to major developments are often described in the words of the workers themselves. The depth of research that has gone into this volume is impressive, especially as it involves fields that I suspect were alien to the authors when they set out. Descriptions of the sometimes convoluted path that ornithological research has followed provide human dimensions to findings that have for long been reported in journals devoid of emotion or personal detail. As a consequence, *Ten Thousand Birds* helps to show how science works, with its attendant joys and disappointments. There are messages to researchers today about the value of understanding where their topic of investigation began and, importantly, how research can be influenced by context. The mini-biographies that terminate the chapters are of variable quality and many contain nuggets of career advice for those just starting out in the profession.

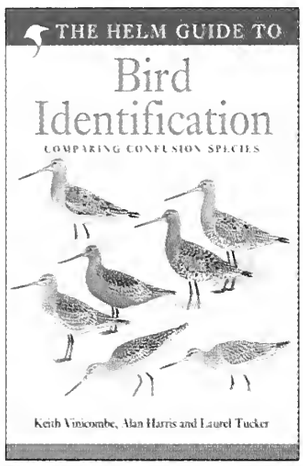
The book is a history of *scientific* ornithology: it rarely mentions the role of the amateur or cultural aspects of ornithology. Despite the subtitle, *Ten Thousand Birds* is inevitably weighted towards mid to late twentieth-century ornithology. Indeed, in a canvassed list of the ten most influential books since Darwin, the earliest was published in 1942 and, in a similar list of the most influential ornithologists over the same period, the earliest was Erwin Stresemann. Although this clearly under-represents the earlier phases of modern ornithology, the authors pay tribute to many pioneers throughout their book. There is a selectivity in the topics covered and the people featured, with a strong emphasis on work from the USA, the UK (especially Oxford) and, to a lesser extent, Germany. An appendix listing 500 ornithologists mentioned in the text notes only 21 geographical affiliations with the Neotropics, Africa, the Middle East, Asia and the former Soviet Bloc. In the many sections featuring David Lack, there is much common ground with Ted Anderson's *The Life of David Lack* (2013), and Birkhead *et al.* give

another outing to the Lack/Wynne-Edwards group-selection debate, following recent versions by, for example, Mark Borrello (*Evolutionary Restraints: the contentious history of group selection*, 2010) and Ted Anderson; Borrello, incidentally, provides a quite different perspective in a wider zoological context. The authors' homage to Lack extends to Robert Gillmor's dust-jacket design (Gillmor provided cover artwork for most of Lack's major books).

Some sections of the book are more successful than others. A few parts read like a textbook and occasionally terms are left unexplained. I have reservations about some details, for example: the reader could come away thinking that the problems of systematics were largely solved (chapter 3); the AOU did not drop trinomials from their 5th *Checklist* because they didn't believe in their utility – in fact, the task of revising them was too large and they wanted to get the list out (p. 92); Eagle Clarke's visit to the Kentish Knock lightship was not his first experience of witnessing migration for himself (p. 117); and Harry Witherby did not initiate ringing in Britain (Landsborough Thomson's scheme launched several weeks ahead of Witherby's; p. 167). Typographical errors are rare, though the listing of one of T. H. Huxley's publications as 1968 (twice, pp. 6, 7) was unfortunate and the indexing of bird species is a bit haphazard.

There are now many books describing different aspects and interpretations of the history of ornithology. *Ten Thousand Birds* is an outstanding contribution to the genre, skilfully doubling as a text covering many of the most exciting developments on the subject. Readers of *British Birds* will find much to enjoy and learn within its weighty pages, at a price that is extraordinarily good value. Highly recommended.

Alan Knox



The Helm Guide to Bird Identification: an in-depth look at confusion species

By Keith Vinicombe, Alan Harris and Laurel Tucker
Bloomsbury, 2014
ISBN 978-1-4081-3035-3
Pbk, 396pp; colour artwork throughout M24082
£25.00 *BB* Bookshop price £22.50

When the *Macmillan Field Guide to Bird Identification* first appeared, in 1989, it was, quite rightly, very well received. Here was a long-needed new approach to the identification guide, focused not on covering all species but on addressing those species or species pairs/groups which cause perennial difficulties for the 'average' birdwatcher (and that means most of us).

Although it quickly became a 'must-have' guide in the early 1990s, this small volume has long been out of print and, of course, much has changed since then. Our knowledge of identification criteria has continued to evolve, taxonomic revisions have dramatically increased the number of species and forms 'on the radar', the occurrence patterns of many species have changed, and digital photography has transformed the way in which we look at (or sometimes don't look at!) birds. Fast forward to 2014, however, and we have a new, updated edition of this ground-breaking guide which responds to all these new challenges.

The author and illustrator line-up remains the same as for the first guide. Laurel Tucker tragically died part way through the production of the plates for the first edition and this was, in the end, a book illustrated jointly with Alan Harris. Happily, this new edition continues to recognise Laurel's formative input and most of her original plates are reproduced here, a tribute to their lasting scientific accuracy and aesthetic appeal. Her beautiful swans plate remains, for me, the best in the book.

Inevitably, this new guide is considerably bigger than its predecessor (396 larger pages compared with the original 224) and covers a much wider range of species and forms, some of which were undreamt-of or even unheard-of in the 1980s. However, as acknowledged in the introduction, the problem of what to include and what to leave out is a very real one. Although it is not focused on the 'super-rarities', discussion of their identification is often directly relevant to that of commoner forms; so, for example, a discussion of Thayer's Gull *Larus glaucoides thayeri* follows that of Kumlien's Gull *L. g. kumlieni* and a section on Moltoni's Subalpine Warbler *Sylvia cantillans moltonii* inevitably has to follow that on Western and Eastern Subalpine

Warblers. The choices were clearly difficult, however – there is, for example, no treatment of either American Herring Gull *L. smithsonianus* or Wilson's Snipe *Gallinago delicata*, both also relevant to the identification of commoner species.

The species texts we do have are a triumph of comprehensiveness, clarity and compression. They range from the relatively straightforward (Goldcrest *Regulus regulus* and Firecrest *R. ignicapilla*) to the much more complicated (Yellow-legged *L. michahellis* and Caspian Gulls *L. cachinnans*) but all are thorough, accurate, well researched, up to date and fully referenced. Many draw on the author's long-running and popular series of mini identification papers in *Birdwatch* magazine. Even those species/groups whose taxonomy is notoriously fluid (e.g. the Great Grey Shrikes *Lanius excubitor/meridionalis*) or for which identification criteria continue to evolve (e.g. Siberian Chiffchaff *Phylloscopus collybita tristis*) are well covered and incorporate the most up-to-date knowledge and thinking.

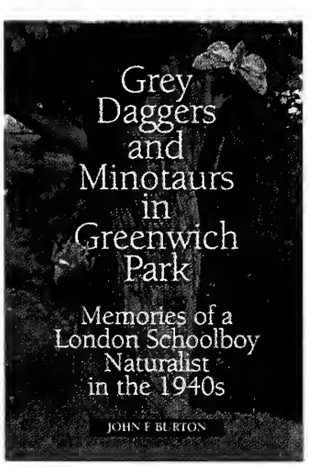
Nowhere are the advances of the last 25 years illustrated to greater effect than in the section on large gulls. Caspian Gull was not even mentioned in the 1989 guide but here it receives a suitably detailed treatment. The author rightly acknowledges that there is a fine line to tread with the large gulls. An over-simplistic treatment will lead to a high identification error rate, whilst addressing all the nuances and complexities could fill a book all by itself but in the process alienate most readers. What's here may therefore disappoint the 'hard core' of gull enthusiasts (who will note, for example, the lack of mention of dark juvenile *argentatus* Herring Gull *L. a. argenteus*), but it will be hugely helpful to the majority of readers.

The author is commendably clear, both in this section and elsewhere, where the limits of our identification capabilities lie (or should that be the acceptance thresholds of records committees?) and highlights the (many) species and groups for which some combination of good-quality images, extensive notes, sound recordings and expert back-up will be either useful or essential. These include such eternal problems as Baltic Gull *L. f. fuscus*, Stejneger's Stonechat *Saxicola maurus stejnegeri* and Eastern Lesser Whitethroat *Sylvia curruca blythi/halimodendri*, all of which are doubtless occurring more frequently than the official record yet acknowledges. This guide should therefore encourage us to document what we see in the field as comprehensively as possible.

Those familiar with the 1989 guide will recognise many of the plates here. With the exception of the (relatively few) Laurel Tucker pictures, all are the work of Alan Harris. Some have stayed as they were but many have been reworked and many wholly new plates have been created too. Their style is, as always, crisp and accessible, well suited to an identification guide. The artwork is both attractive and accurate and I particularly enjoyed the new shrike *Lanius* images – I would happily have any of them on the wall at home.

In summary, this major revision of a classic guide is a resounding success. Its greater dimensions, greater number of species and more in-depth treatments are ample testimony both to the advances of the last 25 years and to the knowledge and skill of its author and artist in condensing them so well. The 'frontiers' (to coin a phrase) of our knowledge today lie well beyond where they did in 1989 and they will doubtless lie elsewhere in another 25 years. Can we look forward to another version in 2039?

Andy Stoddart



Grey Daggers and Minotaurs in Greenwich Park: memories of a London schoolboy naturalist in the 1940s

John F. Burton
Clio Publishing, 2014
Pbk, 399pp; many black-and-white drawings and photographs
ISBN 978-1-78280-206-8 M24247
£16.50 *BB* Bookshop price £14.85

John Burton, living at what was then the edge of southeast London, started a journal focused mainly on natural history in 1940, at the age of nine. This was kept intermittently until 1946, since when he has maintained it with hardly a break, illustrated with his own drawings, many of which are reproduced in this book. This is a

natural history autobiography based on those early diaries covering his schooldays until 1948, when he joined the entomology department of the Natural History Museum in London. Subsequently, he went on to become the assistant secretary of the BTO, before moving in 1960 to the BBC Natural History Unit where he became Sound and Film Librarian. The book provides an interesting insight into the birds and invertebrates (the latter providing the title), especially Lepidoptera, that could still be found in areas that subsequently became part of London's urban sprawl. The nesting Wood Warblers *Phylloscopus sibilatrix* and flocks of Hawfinches *Coccothraustes coccothraustes*, within walking distance of his home in the 1940s are simply inconceivable today. There are accounts of living through the Second World War and of natural history observations made on occasional trips to other parts of the country. Much of the later sections are dominated by extracts from the journal. The book thus gives a picture of the natural world now long since gone from this part of London. The quality of reproduction of the drawings and photographs is disappointing and a map of the area around the author's home would have helped, as would the inclusion of bird and other wildlife names in the index.

Peter Oliver

The Book of Eggs

By Mark E. Hauber, John Bates and Barbara Becker
Ivy Press, 2014
Hbk, 656pp; many colour photographs
ISBN 978-1-78240-047-9 Subbuteo code M24159
£29.99 *BB* Bookshop price £26.99

All of us will have marvelled at birds' eggs at some point in our lives – and certainly a few of us have been tempted to collect them at some point too! This book examines 600 eggs from the collection in the Field Museum of Chicago and displays them in photographs at both life-size and enlarged, the latter enabling readers to fully appreciate the detail on each egg. There is a bias towards species from North America and the Neotropics, although examples are also included from Europe, Africa and Asia. Following an introductory section, which discusses nesting activities and strategies, a brief text introduces each species and describes its egg, complete with measurements.

The aspect that struck me most while exploring this book was just how similar so many species' eggs are – basically slightly off-white and somewhat dull. If, however, you get excited about eggs, then you will probably enjoy the images.

Keith Betton

Also received:

Wildlife through the Year

By Tim Sharrock
Privately published, 2014; pbk, 160pp.
ISBN 978-1-291-66252-8 M24257
£9.95 *BB* Bookshop price £8.95

Britain's Dragonflies: a field guide to the damselflies and dragonflies of Britain and Ireland (3rd edn)

By Dave Smallshire and Andy Swash
Princeton/WildGuides, 2014; pbk, 224pp.
ISBN 978-0-691-16123-5
Subbuteo code M20473
£17.95 *BB* Bookshop price £16.00

Best Birdwatching Sites: Scottish Highlands (2nd edn)

By Gordon Hamlett
Buckingham Press, 2014; pbk, 288pp.
ISBN 978-0-9569876-5-5
Subbuteo code M19215
£18.95 *BB* Bookshop price £17.00

RSPB Handbook of British Birds (4th edn)

By Peter Holden and Tim Cleeves
RSPB/Bloomsbury, 2014; pbk 320pp.
ISBN 978-1-4729-0647-2
Subbuteo code M17860
£9.99 *BB* Bookshop price £9.00

Recent reports

Compiled by Barry Nightingale and Harry Hussey

This summary of unchecked reports covers the period from early April to early May 2014.

Headlines The stand-out highlights in an exciting period included a 'Northern Harrier' at Portland, Alpine Accentor in Norfolk, Crag Martin in Yorkshire, Eastern Bonelli's Warbler in Northumberland, and Cretzschmar's Bunting and 'Caspian Stonechat' found on the same day on Fair Isle. Other spring overshoots included a Collared Pratincole in Devon, Great Spotted Cuckoos in Cornwall and Ireland, Collared Flycatcher in Borders and Sardinian Warbler in Co. Cork. A Buff-bellied Pipit in Lancashire & N Merseyside was the first spring record of this increasingly frequent transatlantic vagrant, while a Yellow-rumped Warbler in the Northern Isles was perhaps even more unexpected. There was a strong passage of White-billed Divers, particularly off North-east Scotland, and respectable influxes of Black Kites, Black-winged Stilts and Red-rumped Swallows.

Red-breasted Goose *Branta ruficollis* Caerlaverock (Dumfries & Galloway), long-stayer to 22nd April. American Wigeon *Anas americana* Tiree (Argyll), 21st–22nd April and 8th–9th May. Baikal Teal *Anas formosa* Long-stayer in Cambridgeshire, at Ouse Washes to 3rd May. Black Duck *Anas rubripes* Sruhill Lough, Achill Island (Co. Mayo), long-stayer again, 17th–20th April. Blue-winged Teal *Anas discors* The Shunan (Orkney), 13th April; Sandwich Bay (Kent), 22nd–29th April. Ferruginous Duck *Aythya nyroca* Lough Beg (Co. Derry), 20th April. Lesser Scaup *Aythya affinis* Long-stayers in Cornwall and Staffordshire; also Holme Pierrepont (Nottinghamshire), 23rd–24th April; Ingbirchworth Resr (Yorkshire), 8th May. King Eider *Somateria spectabilis* Long-stayers in Co. Donegal, Fife and Shetland; also Ythan Estuary (North-east Scotland), 25th April to 9th May; Burghead (Moray & Nairn), 1st May. Surf Scoter *Melanitta perspicillata* Musselburgh (Lothian), long-stayer to 10th May; also Starr Gate (Lancashire & N Merseyside), 20th April; Portmahomack (Highland), 21st April; Rerwick (Orkney), 28th April; Sound of Harris (Outer Hebrides), 2nd May.

Great Northern Diver *Gavia immer* 423 between Machrihanish and Ronachan, 24th April; 319 between Ballachroy and Tayinloan (all Argyll), 10th May. White-billed Diver *Gavia adamsii* Good numbers on passage in northern Scotland. Regular off Portsoy (North-east Scotland) to 8th May, peaking at 14 on 3rd. Elsewhere reported from Borders, Moray & Nairn (3), Orkney (2), Outer Hebrides (2), Shetland (3) and, farther south, singles in Cornwall, Co. Donegal, Hampshire, Sussex and Yorkshire.

Night Heron *Nycticorax nycticorax* In Shetland, Reawick, 18th–21st April, when found dead, another at Quendale and Spiggie, 18th–30th April; Leasowe (Cheshire & Wirral), 23rd–27th April. Cattle Egret *Bubulcus ibis* Long-stayer in Buckinghamshire to 9th May; also Carsington Water (Derbyshire), 9th April; Colyford Common (Devon), 10th April; Ouse Washes, 12th April to 10th May; Saleen, Tramore Back Strand (Co. Waterford), 27th April; Tacumshin (Co. Wexford), two, 27th–29th April, one to 11th May; Wall Common, 4th–7th May and Steart (both Somerset), 8th May; Splatt Bridge (Gloucestershire), 10th May. Purple Heron *Ardea purpurea* Jamesfort, Kinsale (Co. Cork), 13th April; Dungeness (Kent), 22nd April and 1st–2nd May; Kenfig (Glamorgan), 30th April; St Martin's (Scilly), 9th–11th May. Black Stork *Ciconia nigra* Whixall Moss (Shropshire), 28th April.

Pied-billed Grebe *Podilymbus podiceps* Long-stayers at Sruhillbeg Lough, Achill Island, to 16th April, and North Uist (Outer Hebrides), to 19th April. Elsewhere, Rutland Water (Leicestershire & Rutland), 9th–10th April; Loch Thom (Clyde), 24th–29th April.

Black Kite *Milvus migrans* Up to 14 in the period 9th April to 5th May, with records

from Argyll (2), Cambridgeshire, Cornwall (2), Essex, Kent, Norfolk (2), Orkney, Scilly (2) and Suffolk (2). White-tailed Eagle *Haliaeetus albicilla* Kildale (Yorkshire), 11th April; Beccles (Suffolk) and later presumed same Lynford (Norfolk), both 13th April. 'Northern Harrier' *Circus cyaneus hudsonius* Portland (Dorset), 21st April.

Sora *Porzana carolina* St Mary's (Scilly), long-stayer to 10th April. American Coot *Fulica americana* Loch Flemington (Highland), long-stayer to 14th April.

Black-winged Stilt *Himantopus himantopus* Brading (Isle of Wight), ten, 12th April; Bowers Marsh, two, 12th April, then Old Hall Marshes (both Essex), 14th–17th April; Swineham (Dorset), two, 13th April; Dungeness, ten, 24th April, two to 28th April, one 8th–11th May; Medmerry (Sussex), 29th April; Sandwich Bay, 2nd May; Chard Junction, 4th May, then Lodmoor (both Dorset), 5th May; Titchfield Haven (Hampshire), 6th May. Kentish Plover *Charadrius alexandrinus* Dawlish Warren (Devon), 18th April and 2nd–3rd May; Gibraltar Point (Lincolnshire), 19th April; Rye Harbour (Sussex), 26th April. Spotted Sandpiper *Actitis macularius* Sruhill Lough, Achill Island, long-stayer to 23rd April; also North Ronaldsay (Orkney), 2nd May; Farmoor Resr (Oxfordshire), 7th and 10th–11th May; Draycote Water (Warwickshire), 7th May. Lesser Yellowlegs *Tringa flavipes* Lepe CP (Hampshire), long-stayer to 15th April; also College Lake (Buckinghamshire), 5th May; Beadnell Flash (Northumberland), 8th–10th May; The Lizard (Cornwall), 10th–11th May; Benbecula (Outer Hebrides), 11th May. Marsh Sandpiper *Tringa stagnatilis* Burton Pidsea (Yorkshire), 29th April. Long-billed Dowitcher *Limnodromus scolopaceus* Pennington/Keyhaven Marshes (Hampshire), long-stayer to 15th April; Dungeness, 1st May. Collared Pratincole *Glareola pratincola* Northam

Deryk Tolman

195. Great Spotted Cuckoo *Clamator glandarius* and Marsh Harrier *Circus aeruginosus*, St. Ouen's Pond, Jersey, March 2014. Slightly beyond the usual remit of *BB*'s recent reports, but this photo seemed too good to overlook!

Burrows (Devon), 21st–22nd April, again 26th–30th April.

Pomarine Skua *Stercorarius pomarinus* Strong passage along English Channel coast on 5th May included 74 past Selsey Bill, 130 Splash Point, 80 Newhaven and 115 Beachy Head (all Sussex), 76 Hurst Beach (Hampshire), and 103 past Dungeness. Also 55 past Powillimount (Dumfries & Galloway), 6th May.

Stef McElwee

196. Eastern Bonelli's Warbler *Phylloscopus orientalis*, Newbiggin, Northumberland, May 2014.

Whiskered Tern *Chlidonias hybrida* Rockland Broad (Norfolk), 24th April; Otmoor (Oxfordshire), 25th April; Minsmere, 26th April and Walberswick (both Suffolk), 3rd May; Aghills Lake, Skibbereen, 1st–2nd May; Lough Aderra and Ballybutler Lake 4th–7th May, then Ballyhonock Lake (all Co. Cork), 11th May. Forster's Tern *Sterna forsteri* Nimmo's Pier (Co. Galway), long-stayer to 11th April. Arctic Tern *Sterna paradisaea* 2,900 Dungeness, 26th April; 800 Rossall Point (Lancashire & N Merseyside), 27th April; 460 Grafham Water (Cambridgeshire), 1st May. Bonaparte's Gull *Chroicocephalus philadelphia* Dingle (Co. Kerry), 23rd April; Marsh Lane (West Midlands), 1st May; Slimbridge (Gloucestershire), 5th May; Tacumshin, 8th–11th May, two on 11th May. Franklin's Gull *Larus pipixcan* Canna (Highland), long-stayer to 12th April; Crofty (Glamorgan), 18th April; Saltburn (Cleveland), 21st April; National Wetlands Centre (Carmarthenshire), 23rd–28th April.

Great Spotted Cuckoo *Clamator glandarius* The Lizard, 24th April and 3rd–9th May; Barna (Co. Galway), 9th May. Snowy Owl *Bubo scandiacus* North Uist, 10th–11th May. European Bee-eater *Merops apiaster* Angmering (Sussex), 8th April; St Mary's 15th April; St Martin's, 17th April; Dursey Island (Co. Cork), 19th April; Landguard (Suffolk), 6th May. Red-footed Falcon *Falco vespertinus* Portland, 3rd May; Summerleaze GP (Berkshire), 6th May.

Short-toed Lark *Calandrella brachydactyla* Burniston (Yorkshire), 20th April; Fair Isle, three, 27th April, two to 2nd May, one to 11th; North Ronaldsay, 5th–6th May; St Mary's, 6th–11th May. Crag Martin *Ptyonoprogne rupestris* Flamborough Head (Yorkshire), 11th–13th April. Red-rumped Swallow *Cecropis daurica* Records from Cambridgeshire (2), Ceredigion (2), Co. Cork, Cornwall (3), Dorset (2), Co. Durham (4), Greater London, Hampshire, Kent (3), Lincolnshire (2), Norfolk, Scilly, Suffolk (3), Surrey, Sussex (2) and Yorkshire (3).

Hume's Warbler *Phylloscopus humei* Dungeness, long-stayer to 21st April. Dusky Warbler *Phylloscopus fuscatus* Oulton Broad (Suffolk), long-stayer to 17th April. Eastern Bonelli's Warbler *Phylloscopus orientalis* Newbiggin (Northumberland), 3rd May. Iberian Chiffchaff *Phylloscopus ibericus* Grimston (Yorkshire), 13th April. Subalpine Warbler *Sylvia cantillans* Pagham Harbour (Sussex), 21st April; Exnaboe (Shetland), 24th–27th April; Fair Isle, 27th April to 2nd May, another 3rd–11th May and a third on 8th May; St Abb's Head (Borders), 28th–29th April; Portland, 1st and 3rd May; Out Skerries (Shetland), 2nd May; Holme (Norfolk), 5th–6th May; Unst, 7th May. Sardinian Warbler *Sylvia melanocephala* Dursey Island, 20th April–11th May. Savi's Warbler *Locustella luscinioides* Radipole Lake (Dorset), 17th April. Great Reed Warbler *Acrocephalus arundinaceus* Lackford Lakes (Suffolk), 5th May.

Deryk Shaw

197. Male Cretzschmar's Bunting *Emberiza caesia*, Fair Isle, April 2014.

Collared Flycatcher *Ficedula albicollis* St Abb's Head, 28th–30th April. 'Caspian Stonechat' *Saxicola maurus variegatus/hemprichii* Fair Isle, 27th April to 11th May. Alpine Accentor *Prunella collaris* Holme, 26th April.

Citrine Wagtail *Motacilla citreola* Wallasea (Essex), 29th April; Virkie (Shetland), 1st May; West Kirby (Cheshire & Wirral), 5th May; Portland, 11th May. Tawny Pipit *Anthus campestris* Flamborough Head, 11th–19th April; Scarborough (both Yorkshire), 24th April. Olive-backed Pipit *Anthus hodgsoni* Unst, 2nd May. Red-throated Pipit *Anthus cervinus* Bryher (Scilly), 25th April. Buff-bellied Pipit *Anthus rubescens* Cockersand Abbey (Lancashire & N Merseyside), 4th May.

Arctic Redpoll *Acanthis hornemanni* Waters' Edge CP (Lincolnshire), 6th–7th April. Two-barred Crossbill *Loxia leucoptera* Long-stayers: Dove Stone Resr (Greater Manchester), to 17th April; Hemsted Forest (Kent), to 21st April; Lynford, three to 20th April, two to 8th May; Postenplain (Shropshire), to 25th April; Leith Hill (Surrey), to 19th April; Broomhead Resr (Yorkshire), six to 17th April, three to 4th May, two to 7th May; also Santon Downham (Norfolk), 29th April.

Roger Riddington

198. Female Yellow-rumped Warbler *Setophaga coronata*, Haroldswick, Unst, Shetland, May 2014.

Cretzschmar's Bunting *Emberiza caesia* Fair Isle, 27th April to 2nd May. Rustic Bunting *Emberiza rustica* Fetlar (Shetland), 9th May. Little Bunting *Emberiza pusilla* Holme, 27th April; Hilbre (Cheshire & Wirral), 28th April; Fair Isle, 29th April and 9th May; North Ronaldsay, 3rd May.

Yellow-rumped Warbler *Setophaga coronata* North Ronaldsay, 6th May, then Unst, 7th–8th May.

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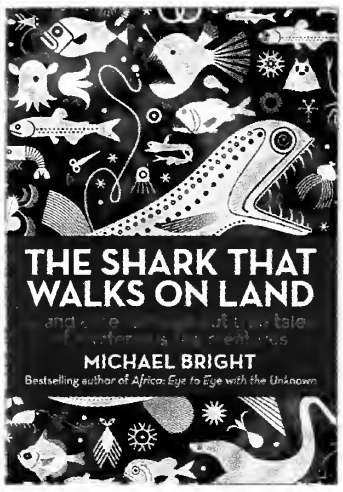

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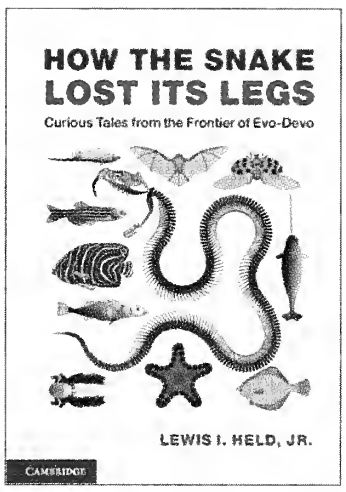

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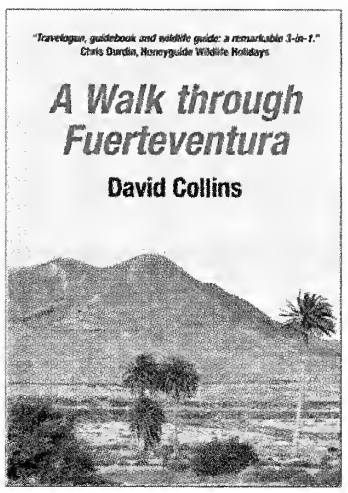

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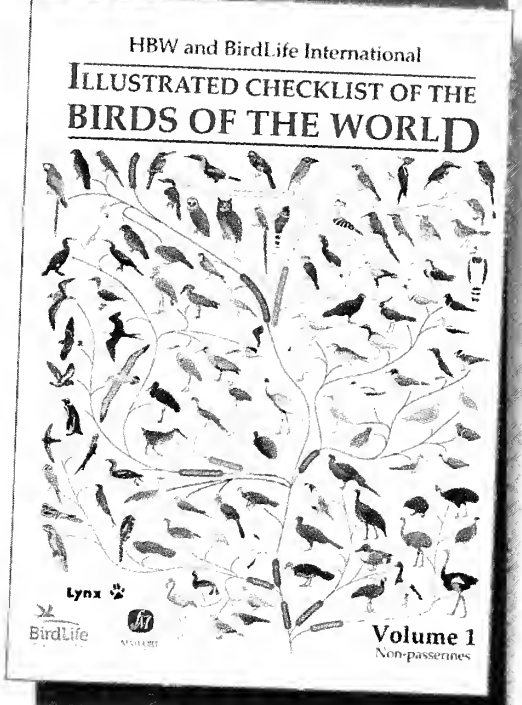

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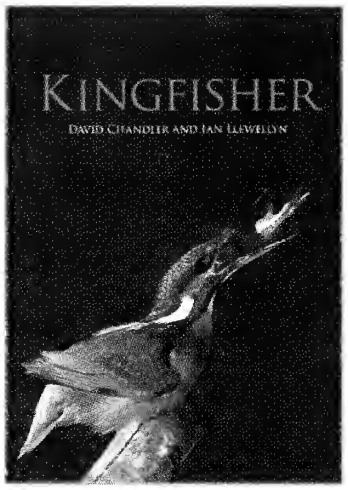

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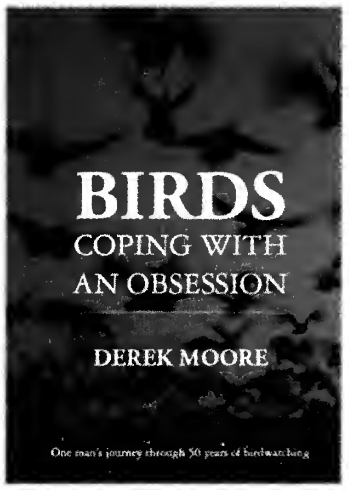

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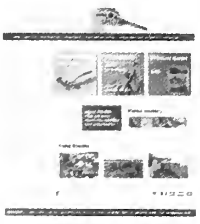

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